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First Test:
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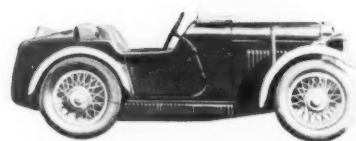
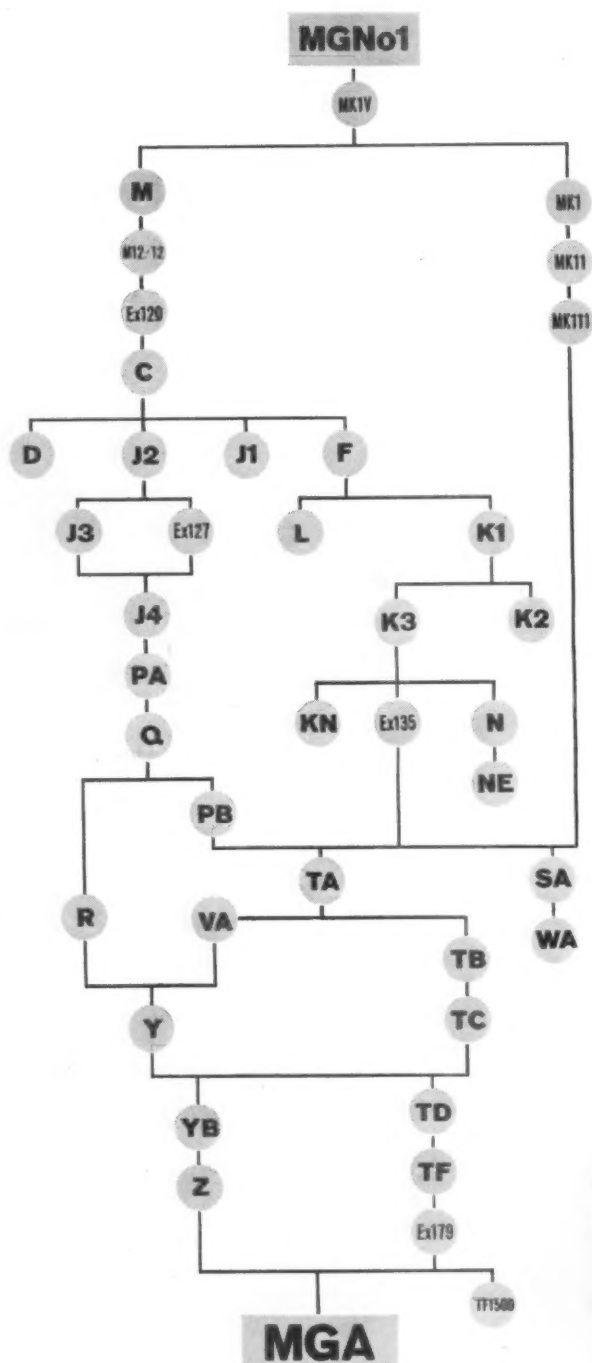
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November 1958

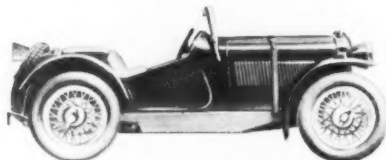


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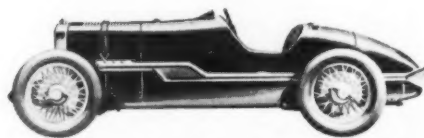
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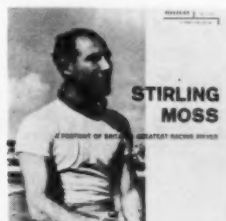


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SPORTS CARS ILLUSTRATED

november 1958

no. 5 vol. 4



The most many of us get to see of the 4.5 Maserati is a red blur. Here is the driver's eye view. Kodachrome by Irving Dolin.

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Dealers from Coast to Coast

THE DAY was one of those typical early fall New England days; the air was clear and warm with just that hint of freshness that betokens the approach of autumn. The road was clear ahead. A full quarter of a mile behind was a white Chevrolet sedan.

Suddenly there was a flash of gold and white fur that zipped out of a driveway and across the road sixty feet ahead. It was a tiny Collie pup, excited and scampering hell-bent for a path on the other side of the sun-dappled blacktop. The car coming from the other direction slowed momentarily and then went on. So did we—partially. Foot came off throttle and poised over brake pedal waiting for the child that chances indicated might be scampering after the pup. There was no child; the pup made the pathway from the depths of which came the sound of childish glee. Down came foot on throttle.

Simultaneously there was a shriek of tortured rubber, then a crunching *whump* of metal on sheetmetal. The Porsche rocketed ahead, accelerating momentarily from 35 to 65 before bouncing to a halt 50 feet further along the road.

No more than thirty seconds had elapsed between the glance in the mirror at the white Chevy and that crunching impact that brought both Porsche and Chev to halt in the Connecticut sunshine.

We climbed somewhat dazedly out of the coupe and headed back toward the enraged driver of the white sedan.

"Look what you've done," he shouted. "You've wrecked my radiator! You punched a hole in it, see!"

We indicated the mangled back end of the Porsche with the thumb and asked what he thought he had done to us.

"It's all your fault," wailed the man. "You stopped for an *animal*. Why didn't you hit him?"

We didn't hit the man, either, which is something of a record for forbearance.

Later a pair of troopers very carefully explained that one doesn't hit animals with automobiles, that one watches out for children under those circumstances and that one doesn't drive large sedans along populated narrow roads at high rates of speed. And that it behooves one to watch the road far enough ahead so that one doesn't get into such difficulties. While they explained it they wrote and wrote and wrote. And while they wrote there came from the bush covered hill a sharp joyous bark and a child's gay laughter.

In a garage is a wrecked Porsche coupe but somewhere in upstate Connecticut there is a healthy, happy puppy and a healthy, happy child.

* * *

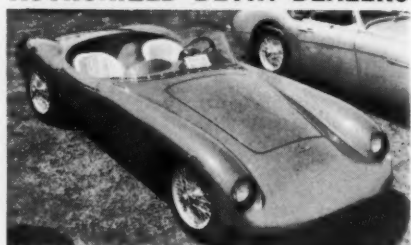
Coming up next month is something really big—SCI's special December issue. It's big in every way: thirty more pages, a twenty-page test section on dual purpose sports cars—cars you can still drive to the track, go racing in with a chance of being competitive and then drive home. It's big in names, too with Ken Purdy, Dennis May, Merwyn Dembling, Griff Borgeson and others in SCI's line-up of stars. And, there's something else—the first up-to-date report on racing behind the Iron Curtain.

THE MANY READERS OF SCI who have enjoyed Dennis May's interesting, witty and sometimes gingery stories of racing in the grand manner have never had a chance to meet Dennis's son Nick through the pages of the magazine. To our great misfortune, none of us will for Nick, a Pilot Officer in the R.A.F., was killed in a motor accident this summer.

Great though the loss of their son is to Dennis and Ann May, it is not theirs alone but ours and that of our readers as well. Nick May was well on his way to following his father in the doing of deeds and the telling of the deeds of others while hiding his own light under a bushel. He commanded his cadet class at Kirton-in-Lindsey and later founded and edited a magazine for the cadets at Claresholm, Alberta. In his single season of racing he chalked up an impressive number of wins and he was a regular helper at B.R.D.C. meetings at Silverstone. When the accident occurred, Nick was within a week of gaining the wings which he came to Canada to win. Such was the esteem in which he was held by the R.A.F. that they presented his wings to Dennis as a token of appreciation, a most unusual step but an indicative one.

The sport and the field of motor journalism as well as Nick May's family and the R.A.F. are much the poorer for his loss. —j.p.c.

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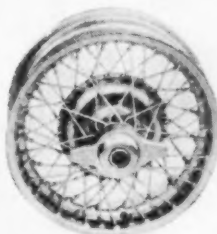
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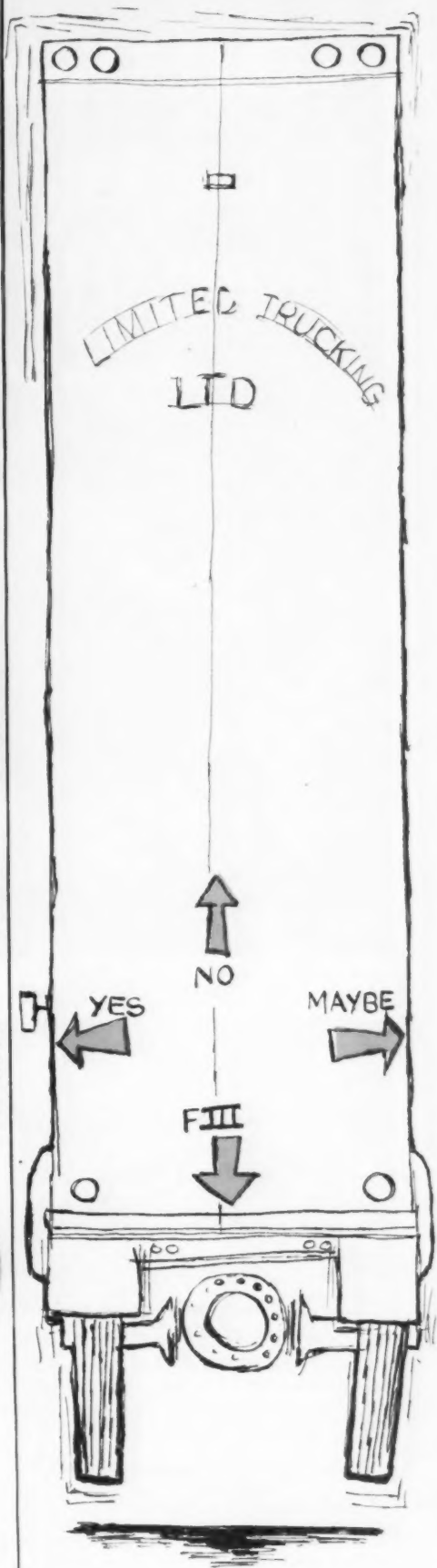
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letters

AMEN

I was peacefully proceeding along one of our main highways on my way to work in my Austin Healey curiously watching the antics of a Corvette showing me how fast he could get away from the light and then slowing down in front of me . . . in the old days one could call it "bull baiting" but I wasn't having any. I then observed a Cadillac and a Pontiac passing the now slowing Corvette at a frightful rate of speed considering the size and bulk of such "trucks". At this point, my observant travels were interrupted as I was spotlighted down by the local constabulary — for speeding. Forty nine miles an hour in a 40 mph speed zone.

OK, I was speeding — keeping up with the normal rush hour flow of traffic at that hour of the morning in the outside lane in the suburbs.

I indignantly pointed at the "truck jockeys" up ahead of me who were pulling away at an astonishing speed but he gave me a look that said "pull over and wait". Did he tag the Cadillac in the lead? Did he tag the Pontiac straining for 2nd place in the three car race? No, he tagged the slowing Corvette doing 55 mph who, by this time, had decided that racing was silly because he could warp those other two nit-wits any day of the week.

So, two sports cars bit the dust. I say, are we being discriminated against, or are we?

Why were we speeding? Why were we the chosen ones? A possible reason could be that because of the unstability of sports car speedometers you know that you are doing somewhere between 40 and 50 but you aren't sure just where because the needle keeps jumping up and down or, it could be that the police just expect sports cars to be speeding and treat them accordingly. My next ticket will probably be for speeding out of a parking space — in reverse.

Police who caught a friend of mine driving one of the smaller, slower sports cars was informed by the law that their car was so slow that they couldn't catch the fast Detroit Iron so they had to content themselves with catching older cars, and smaller sports cars . . . what do you think of this for an explanation?

Do I sound bitter? Do I give the impression that I feel a little hard nosed about the whole thing? Well, I am bitter and I am hard nosed and I'm sick and tired of people pointing accusing fingers at "those funny little foreign cars" when those "floating boat docks" that they are driving get away with murder.

Take, for instance, an automobile accident that is written up in the newspaper. Typical example involving American car: "Man Killed in Auto Accident". Typical example involving sports car: "Man Killed As Sports Car Misses Turn". These two accidents could very well have happened in the same place with the two cars going at the same speed but look at the difference in the presentation to the public.

Granted, there are a few in every crowd

who give the whole bunch a bad name but I'd venture to say that this is much more of a minority in the sports car group than in any other group on the road today. I do not sanction speeding or reckless driving, but, sports cars at speed are ten times safer than the "Queen Mary's" of the highway.

Solution? Is there one? There is not much we can do about this condition but keep one eye glued on the rear view mirror and the other on the speedometer. Keep our exhaust notes to a reasonable pitch, our tachs in the black, and hope for the best.

Diane C. Slingerland
Sports Car Club of America
Four Cylinder Club of America
Wheaton, Illinois

SHORT QUARTER?

Having been a steady subscriber to both your magazine and "that other one", I have had sufficient time to compare the two. One thing gripes me no end. In many of the road tests, your competitor gets different performance than you do. I refer specifically to your latest issue, and the test of the Saab 750 GT. You obtained a speed at the end of a quarter mile of 63 mph and an ET of 21.3 seconds. The other magazine's turned 66 mph at the end of the quarter, in an elapsed time of 18.5 seconds. Do you guys tie balloons to your feet, or do you carry the whole magazine staff in the trunk?

Rolfe A. Travis
Phoenix, Ariz.

It all boils down to the difference between measuring the quarter by means of a Speed Pilot odometer, and SCI's use of a surveyed quarter rechecked with a steel tape.—Ed.

OIL

For the benefit of those who may be interested, the D-A Lubricant Co., who've sponsored a car at Indy for the past six years, and this year also sent a car to Monza, are in the process of marketing the oil we use in our racing machines under the name D-A Speed Sport.

At the present time, this specialized lube is available only in the Midwest; however it should be marketed nationally within the next few months.

Jack Peck
Indianapolis, Ind.

UH-HUH

In the September issue of SCI in the Technotes department, Steve Wilder advises us readers that you've "... banished so many proofreaders to various farflung spots that soon there won't be anybody left at all." May I suggest that you contact some of them and get them back.

It might pay your caption writer to read the story. For instance in the Dino 246 article he describes the breakdrums as "bevel gear-like in appearance", while the text correctly terms it as helical fins.

I would also like to inquire about something in the Newsletter from Europe. Could you tell me what a Evans is? It's stated that the Gendebien-Frips Terrari was fitted with one. What ever it is.

S. R. Weatherford
Pgh. 13, Pa.

Breakdrums? Gendebien-Frips Terrari? Hmmm. Who proofreads your stuff?—Ed.

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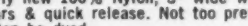
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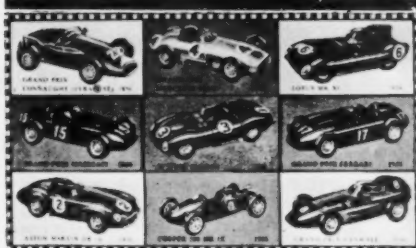
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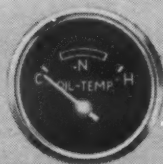
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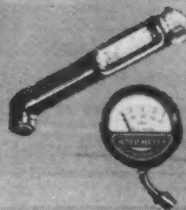
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TECHNOTES**ROAD TEST SPECS**

Effective with our September issue, the weight of the test cars has been given in the "as tested" condition, i.e., with two people and assorted gear aboard. In round numbers, this adds about 300 pounds to the curb weight. This "as tested" weight is also used in the Power to Weight figure (we call it that traditionally, yet just as traditionally present it inversely in pounds per horsepower) and the Brake Lining Area per Ton. Why? Because the weight of the driver and his passengers, if any, must also be accelerated and braked. When these items are not included in the specifications, it does not mean that we've run out of room, it's just that we were unable to weigh the car under test.

AIR REQUIREMENTS

I am interested in the McCulloch supercharges, especially the newer VR-58 which is said to pump 2800 lbs. air per hour at 5 1/2 psi boost at 32,000 impeller rpm. I am told it can sustain over 300 bhp before overloading the blower drive where the old VS would only push out enough for 200 bhp.

How many pounds of air per minute are needed to develop one horsepower? I have been told that the figure is 0.130 but I don't see how this was derived. I should think it would be fuel consumption rate times the Air-Fuel ratio, the latter being between 10.9 and 11.1 to one at maximum power.

Edward M. Thomas
 Charlotte, N. C.

The figure quoted for air required in pounds per horsepower-minute is correct for gasoline when the Thermal Efficiency is down to 20% (which would probably be the case for a race-tuned engine). Gasoline when burned completely releases 18,000 British Thermal Units per pound or 108,000 BTU per US gallon. Since one BTU is equivalent to 778 foot-pounds and one hp equals 33,000 ft-lbs per minute, then the air required when the Air-Fuel ratio is 11.0 to one and the Thermal Efficiency

$$\frac{33,000 \times 11.0}{18,000 \times 778 \times 0.20} = 0.13 \text{ lbs (air) hp-min.}$$
 As you suspect, this is the fuel consumption rate times the A-F ratio, but notice that the fuel consumption must be presented as pounds per hp-minute, not gallons per hour.

Other fuels have different Calorific Values than 18,000 and require different Air-Fuel ratios; in a racing engine these should approximately balance one another since the point of the usual rich mixture is to ensure that all the oxygen is consumed. Nitro fuels are a different story, they contain oxygen themselves.

Predictions are rash things indeed, but at the rated output of the VR-58, a suitable engine mounted under it should produce 360 bhp at a Thermal efficiency of 20%. Increasing the latter or raising the blower output by boosting its revs (at the expense of reliability) should see this figure jumped considerably.

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**NEWSLETTER**by **Jesse L. Alexander**

If the idea of running Moss' '57 Le Mans Maserati on American highways doesn't tickle your fancy even a little bit, then you haven't much in common with Mr. Robert Staver of Minnesota. He has just paid some \$15,000 to enjoy that privilege. Part of that went for stretching out the wheelbase about five inches and another part, believe it or not, went for a heater. If we remember our Le Mans history, then those Minnesota winters must be really cold!



Amazing the number of sports car owners among US Forces in Europe. A network of active clubs are continually sponsoring airport races, hill climbs and rallies, especially in Germany. Several boys have competed in International events on the Nurburgring and in the Fribourg Championship Hillclimb. Currently the most outstanding American driver is Milwaukee's William Wuesthoff who is serving in the Army in Germany. He drove a Porsche Carrera in the 1000 Kilometer Nurburgring Race last May, leading his class until trouble dropped him back. More recently, in a six lapper there, his 1600S finished 7th overall, ahead of a number of German Carreras.

Ferrari brakes: Before the 1958 Formula I season is over, we may see a Dino 246 Ferrari fitted with discs. Von Trips and Phil Hill tossed their German Grand Prix chances out the window when the brakes began disappearing within the first few laps. The immediate answer may lie in a failure to "bed in" the new linings properly before the race, with excessive temperatures in the opening laps probably glazing them over. Hill had absolutely no pedal at all, catching 10,000 rpm once when forced to use first gear to slow the Ferrari on a treacherous downhill section. Ferrari cannot afford to wait any longer. He has already done some tests and Peter Collins seemed to be extremely pleased with the Dunlop wheels and discs he had on his personal 250 Gran Turismo back in July. Three days after the German Grand Prix, Ferrari test driver Sevani was flogging a FI car around the Modena Autodromo in an attempt to destroy a set of

from EUROPE

newer, bigger linings, but discs are certainly in the making; Ferrari says that up to now it's been delivery hold-ups on the part of the manufacturers.

Stirling Moss has apparently given up any idea of retiring at the end of this season for it's been announced that he will be competing in the New Zealand Grand Prix in January. Fangio was also offered an attractive pile of loot to go, but if Mrs. Juan has her way, he'll no doubt compete in a few South American races and then definitely call it quits. The French Grand Prix was his last European race. It won't be the same without him; indeed the passing of an era.

Wolfgang Von Trips won the European Hillclimb Championship with his first place in the Gaisberg, Austria climb in mid-August, driving a Porsche RSK. Next month we'll have more dope on the 1959 Championship; it will be International instead of just European. This means Pike's Peak will be included. Ak Miller has already invited Denis Jenkinson to ride up the hill with him!

Championship Point Standings. For the first time in some years there is quite a battle going on. Stirling Moss, long touted by the loyal British Press as the next World's Champion, is having a real tussle with his fellow countryman Mike Hawthorn. Mike has come to life this season and though second to Stirling (Vanwall) at Oporto in Portugal, he made the fastest lap of the day. Going into the Italian GP then, he has 36 points, Moss has 32. But rule changes for the '58 Driver's Championship make things less simple. Not only can a driver earn no points by finishing in a car he didn't start in, but the penalty for inconsistent performance (such as Moss' this year) is lightened since point totals are figured only from one's best runs in six of the ten Grandes Epreuves. If Casablanca does not come off on October 19th, this will be reduced to five out of the nine. What makes all this so pertinent is that Hawthorn's got 36 for six (37 for seven) but Stirling's 32 are from only five. The race is still wide open.

If Jean Behra joins the Ferrari team next year, BRM will really be in a bad way. The fourth place at Oporto is commendable but the car should begin to win soon or pack up for good. The Nurburgring was a complete fiasco for the Bourne outfit and makes one wonder why they didn't bring a car there several weeks in advance of the race to experiment with shock absorber settings and spring rates. It is truly amazing that no one has yet really learned anything from the Mercedes way of doing things. Budget limitations? Skimping on preparation is a poor way to save money.

—Jesse Alexander

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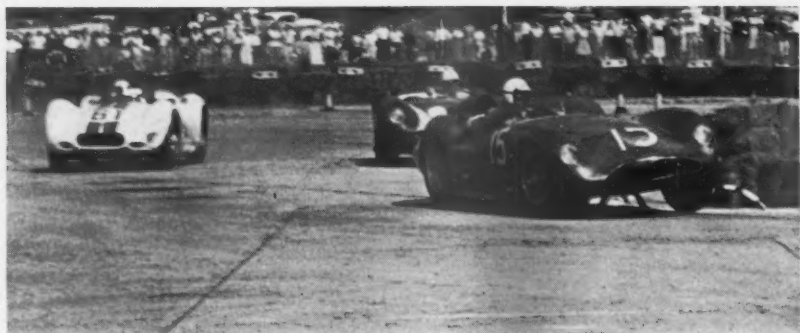
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Hi, there! How would you like to have one of our great new all-weather Mittens free? Well, all you have to do is come up with a name for the fabric they're made from. Here's the deal: just recently one of the biggest chemical companies in the world developed a fabulous process for treating cloth to make it really resistant to water, mildew, fog and all the hazards of weather. They found a way to impregnate high quality fabric with silicones and still leave it as soft and supple as a baby's toe, yet this lightweight, easy to handle material stays water repellent even after many washings. "Perfect for Mittens", we exclaimed, because a Mitten is designed to protect the fine finish, leather, wood and chrome of your valuable car while it sits outside exposed to the elements. This new wonder fabric will do just that, and while we were having covers tailored to fit ANY MAKE OR MODEL OF IMPORTED CAR, we decided to incorporate a couple of new refinements; 1) Tie tabs and a nylon cord to use while trailering a car, or for extended storage periods; 2) Iron-on patch for radio antenna. These are in addition to the usual snug-fit shock-cord sewn in the ends and the guaranteed workmanship which we have backed up with money for the past 6 years. We still have, and will continue to sell, the original light canvas sun and dust cover . . . which is not intended to ward off rain and the like, but to protect against bird and tree droppings, dirt, harsh sun and so on. But the new Mittens, all weather models, must have a name to set them apart. Read the contest rules at the right, suggest a name and wait for the postman to bring you a refund or a Mitten . . . or one of 9 other valuable prizes: 2nd & 3rd; pr. of man's or lady's Grand Prix Gloves, tan or black; 4th through 7th; Super Fireman Fire extinguisher; 8th through 10th Jar of Waxomatic.



Fits with top up or down and over mirrors

CONTEST CLOSES NOVEMBER 30 . . . USE THE COUPON

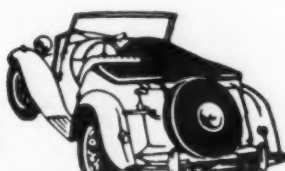
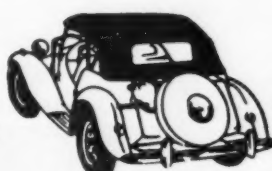
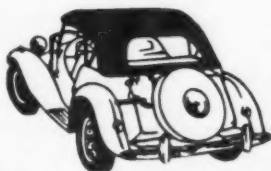
Enter right away, though, the contest closes Midnight, November 30, 1958. Just suggest a name for the new fabric, like Orlon, Nylon, Coca Cola, Camels, or something as easy to remember and which will become as well known. Jot it down on the coupon, which you use to order a Mitten or one of our un-matchable top or tonneau cover bargains, and bung it off today.

CONTEST RULES

1. Contest open to any purchaser of an MG Mitten car cover, top or tonneau cover.
2. Entries must be postmarked no later than Nov. 30, 1958.
3. Decision of Judges is final.
4. All entries become the property of MG Mitten, Inc.

MG Mitten	Manufacturer's List	Direct-to-you MITTEN Price
Healey Hugger	\$32.50	\$24.50
Triumph Tunic		
Alfa Apron		
Fiat Frock		
Sprite Spat	\$37.50	29.50
Renault Romper		
Volkswagen Vest		
Velve Vest		
Ghia Gown		
Porsche Parka		
Minx Muff		
Morris Muff	\$40.50	32.50
Corvette Cap		
Thunderbird Teepee		
Jaguar Jacket		
XK 140-50 & 3.4		
Mercedes Muff	190 - 300 SL	

PURCHASE OF TOP OR TONNEAU COVER ALSO QUALIFIES YOU TO WIN



LARGE WINDOW STYLE. Supplied complete with large crystal clear plastic rear window; size same as originally supplied by manufacturer. Cars originally not equipped with large window the size is as big as entire back curtain. MG size is approx. 14" x 32". Window tested and approved for use in 48 states; folds down with top. Guaranteed not to crack, break or cloud up.

(B) SMALL WINDOW STYLE. Complete top with back curtain for small window. Use glass and frame from present top when installing. For those cars not originally equipped with the car manufacturer with glass and frame, rear curtain is supplied complete with small size clear flexible plastic window sewn in; size same as car manufacturer originally supplied.

(C) TONNEAU COVER. Extra heavy duty brass zipper in the center. Driver's side can be zipped open or complete front seat area may be opened. Holds snug over body of car when driving or racing. MG-TC, TF, TD, require zippers at door corner for best styling and fit; in these cases tonneau is equipped with additional zippers. Needed hardware and fittings included.

* Precision tailored for your specific car make, year, model, series and body style. Complete ready to install. . . Nothing else to buy. Trim and metal fittings included! * Design-engineered for perfect simple installation. No special skill or tools required * You can do it YOURSELF and turn out a professional job. . . Step by step illustrated instructions included shows you how! * No sewing or alteration is necessary. Cooperating directly with the world's largest manufacturer and designer of tops and tonneaus and bringing these straight to you means a tidy savings. If your car is listed below it means you can save substantially.

CAR-MAKE	YEAR	PRODUCT DESCRIPTION	3-ply deluxe Fabric 18 Mo. written guar.	Best super vinyl 3 yr. written guar.
Austin Healey	1954-58			
Corvette	1953-58			
Hillman Minx	1950-58	Tonneau Cover MGA	\$18.95 (Mfr's list \$33.50)	\$23.75 (Mfr's list \$38.75)
Jaguar	1950-58		(Mfr's list \$48.50)	(Mfr's list \$69.50)
MG	1948-58	Tonneau Cover (except MGA)	\$29.95 (Mfr's list \$48.50)	\$43.75 (Mfr's list \$69.50)
MG A	1956-58		(Mfr's list \$48.50)	(Mfr's list \$69.50)
Mercedes Benz**	1956-58	Top - Small Window	\$29.95 (Mfr's list \$48.50)	\$43.75 (Mfr's list \$69.50)
Morris Minor*	1950-58		(Mfr's list \$48.50)	(Mfr's list \$69.50)
Porsche**	1952-58	Top - Large Window	\$29.95 (Mfr's list \$48.50)	\$43.75 (Mfr's list \$69.50)
Triumph	1952-58		(Mfr's list \$14.50)	(Mfr's list \$15.95)
Volkswagen*	1950-58	Tire Cover - MG State size	\$9.87 (Mfr's list \$14.50)	\$12.80 (Mfr's list \$15.95)
Sunroof also available				
		Side Curtains - MG	\$29.95 (Mfr's list \$48.50)	\$43.75 (Mfr's list \$69.50)
		Volkswagen Sunroof	\$15.93 (Mfr's list \$19.50)	\$16.93 (Mfr's list \$21.75)

3 PLY DE LUXE FABRIC — 18 month written guarantee. 100% waterproof. Handsome fine weave finish. Fabrics banded together in the center with tough high tenacity rubber.

Color choice: White or Black outside with Black or Tan inside color: Green or Blue outside with Black inside color. Tan both sides.

BEST SUPER VINYL PLASTIC — 36 month written guarantee. Heavy duty 100% waterproof material. Best quality Vinyl reinforced with strong fabric inside. Colors stay new and bright because they're clear thru the Plastic. Washes clean like rest of your car. Rich, vivid grained finish gives the warm character and appearance of fine imported fabric.

Color Choice: White or Black outside with Black or Tan inside color: Green or Blue outside with Black inside color. Tan both sides.

IMPORTANT: HOW TO ORDER INSTRUCTIONS
Please be sure to supply this information about your car because each top and tonneau is made for your exact car make, year, model and body style.

1. Specify exact car make, year, model.
2. State quality; Deluxe or Best Super Vinyl.
3. Specify color choice.
4. State top style.
5. Describe body style.

MG MITTEN

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I suggest the name _____
for the new Mitten fabric.
I am ordering a ☐ Top ☐ Tonneau ☐ Mitten
details on attached sheet of paper.

I enclose \$ _____

Name _____

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City _____ Zone _____ State _____

Calif. Residents add 4% sales tax. Be sure to state make, yr. model, body style when ordering Mittens.

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WINDOWS: All weather, roll up windows: sedan comfort convertible convenience.

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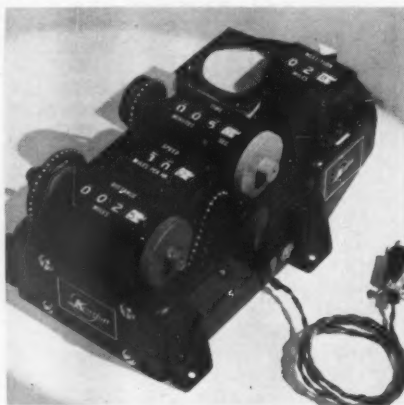
S. H. Arnolt, Inc., 2130 N. Lincoln Ave.
Chicago, Illinois Lincoln 9-1500



what's new?

ON TIME

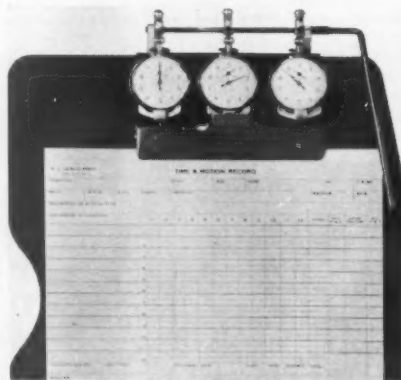
Kearfott Company, Inc., Little Falls, New Jersey, offers this precision rally computer that eliminates the need for TSD tables, slide rules, dual stop watches, special odometers, and all other gadgets commonly used in serious rallying. The computer is completely independent of the



car, with the exception of the electrical power required to run the motor. A mounting bracket is provided for a sweep second hand watch, which is the only additional item necessary.

PUSH-PULL, CLICK-CLICK TIME LAPS THAT QUICK

Suited to all types of timing, the Model 240 Multiple Holder Board manufactured by Meylan Stopwatch Co., 264 West 40th St., New York 18, N. Y. sells for \$17.50. Set first watch at zero, start and stop second, have third in motion. The first click of the lever starts number one, cocks number two, stops number three. At end of first



element, click lever to stop number one, start number two, reset three. At this point, the second element is being timed by number two while number one may be read at the observer's convenience. Number three is now ready to time the third element. This automatic action goes on indefinitely until all elements have been timed.

POOF . . . YOU'RE SAFE

If and when it becomes necessary to use one, you don't want to take the time to read the operating instructions on your fire extinguisher . . . but who is not familiar with an aerosol bomb? Burt Associates, 188 West Norwalk Road, Darien,



Connecticut offers this handy unit which is non-toxic, and effective on all types of fires. Approved by the SCCA, this 16 oz. extinguisher comes with mounting bracket and full instructions at \$2.50 plus 25¢ mailing charge.

TAKE CARE

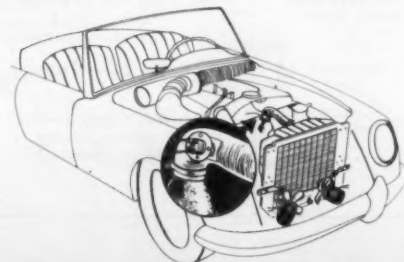
Arnold Leather Products Company, Box 133, Cleveland 21, Ohio, is now packaging it's RE-TAN-ER in a 16 oz. aerosol container retailing at \$3.95. Just spray it on, and RE-TAN-ER prevents hardening, cracking, mildew, loss of color and lustre. Not oily nor greasy, yet it restores the natural oils and brings back the original finish, as well as making it waterproof. One application gives a year's protection.

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Delta-Swift Ltd., Sheffield, England, offers this unique solution to the problem of bent and broken radio aerials. What looks like, and is, a fully adjustable fender mirror, doubles as a highly efficient radio aerial said to be as sensitive as the conventional whip type. The chrome plated unit, with convex mirror, requires only one hole and is as easy to install as a normal fender mirror. All connections are fully protected by weatherproof covers. A 7 foot length of aerial cable is provided.

STAY COOL, MAN

Designed to provide cooling fan action only when you need it, the Everkool Power Booster Kit consists of two electric fans mounted in front of the radiator, and regulated by a thermostat. The unit starts automatically when the water temperature reaches 185 degrees, and stops when the temperature drops to 165 degrees. For information contact Everhot Products Co. 2001-09 W. Carroll Avenue, Chicago, Ill.



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ALSO AVAILABLE FOR THESE CARS:

Alfa Giulietta Sprint Exhaust System	\$69.50	Mercedes 190-SL Exhaust System	44.50
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Fiat 600 Exhaust System, All Models	19.95	Porsche 1300, 1500, 1600, 1600S	44.50
Fiat 600, with sports manifold	44.50	Renault 4-CV Exhaust System	19.95
Fiat 1100 Exhaust System, 1958	44.50	Renault Dauphine Exhaust System	27.50
Fiat 1200 Sedan	69.50	Simca Aronde, All Models	44.50
Jaguar XK-120M, XK-140M, XK-150	79.50	Volkswagen, 1955 and earlier	32.50



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tommy milton and the d



by Griff Borgeson

EACH NEW ATTACK on the Land Speed Record is the horizontal equivalent of an assault on an unclimbed Everest. The courage and daring required, and the danger involved, are identical in both cases. This was as true when Jenatzy turned 65.79 mph in 1899 as it was when Cobb averaged 394.2 in 1947. It was that way in 1920 when Tommy Milton astonished the world with his two-way record speed of 156.046 mph. At that time, of course, his achievement was just as fantastic as Cobb's was to be 27 years later. In fact, it took seven major attempts over a period of six years to top Milton's near-deadly dash at Daytona on a 16-cylinder Duesenberg.

Tom rose to fame the hard way. His first ride was with Alex Sloan's troupe of barnstormers who thought nothing of covering 3,000 miles by rail with nine racing machines in a converted cattle car and staging seven-event races in five different cities, all within eight days. Milton furnished his own Mercer and, with a salary of \$35 a week, kept body, soul and Raceabout together. He stuck with Sloan for three years and then, unable to stand forever being an also-ran in races that were always fixed, he bolted

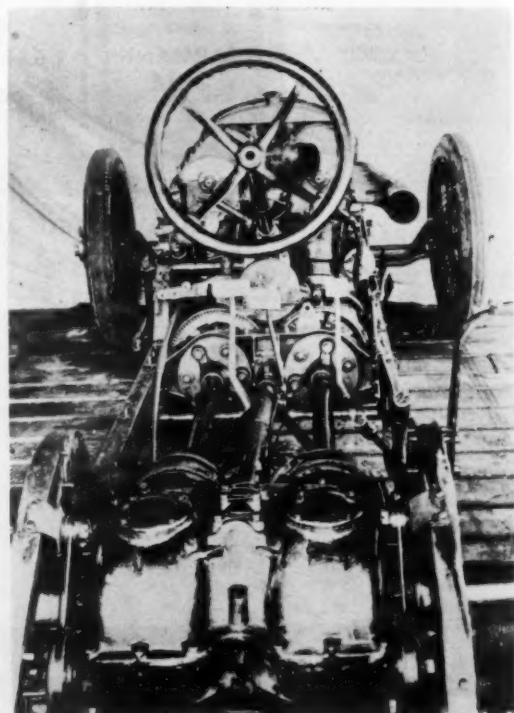
and blew off everyone in the troupe, including the great Disbrow. Naturally, he was fired. In 1916 he joined Fred Duesenberg's organization in the capacity of fast chauffeur, designer and racing-car constructor and here his real fame began.

There weren't many chauffeurs (this is a vintage story and that's the legitimate vintage term) in Milton's class and rivalry naturally was intense among these few. Tommy Milton and Ralph de Palma were particularly hard-slugging front-line competitors. De Palma had set a new Land Speed Record in 1919 at 149.875 mph on a big aircraft-engined Packard. Milton wanted the record for itself alone but the prospect of one-upping de Palma sweetened the lure.

Another leading player in this drama was the immortal Jimmy Murphy, who had been Milton's riding mechanic with Duesenberg. His ambition was to drive a racing car, however, and Milton, recognizing his potential greatness, helped him to achieve his goal. When Milton, almost burned to death when his car caught fire in a Championship race at Uniontown, was nearing the end of a three-month hospital confinement, Murphy came to see him. He announced

Two propellor shafts drive live rear axle, center shaft is a torque arm. This was one of the first usages of a live rear axle, in which the axle shafts themselves supported the weight and were not contained in a housing. Bearings in outer ends of dual final-drive housing.

Two sohc 300 cu. in. Duesenberg straight 8 engines supplied the power. Hastily built reverse gear mechanism is clearly shown between the two flywheels. Exhaust pipe from left engine crossed to right, through the cockpit!



double duesy



that he felt whipped, that "Duesie" would never give him a ride and that he was going back to California and forget it. Milton said, "To hell with that, kid. Stick it out until spring and I'll tell Fred that if he doesn't put you at the wheel, I'll quit!" Tom didn't have to quit and Jimmy got his ride and went on to win the French Grand Prix and Indianapolis.

While Milton lay in the hospital in the winter of 1919, seared and scarred, he had plenty of time to perfect his plan to become the fastest man on earth. The 300 cu. in. formula was done for and was to be replaced by a 183 cu. in. limitation on engines for international competition (the Europeans were still coming to Indianapolis). This meant that that 300 cu. in. competition engines suddenly were easy to acquire and Milton designed his "beach car" around a pair of Duesenberg's big, original 300 cu. in. sohc straight eights.

He completed his convalescence that winter building the car from the ground up. He cut the metal for the frame from steel sheet by hand with a hacksaw; he swung a 16-lb. sledge for the blacksmith who formed the rails. He did delicate machine work and assembly and he put up the money

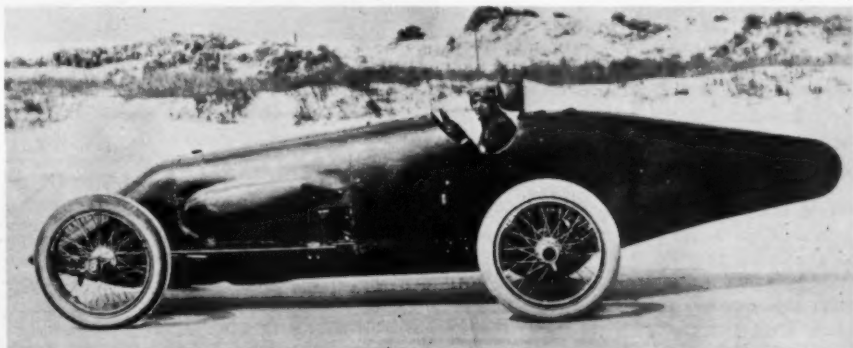
for the car. He wanted the record and he wanted to win it through his own efforts, to the fullest possible extent.

In the spring of 1920 the Duesenberg team migrated to Beverly Hills for the AAA Championship race there, and the yet-unfinished beach car was brought along. This was Murphy's first racing victory and after the event the team pitched into installing the two engines in the record machine.

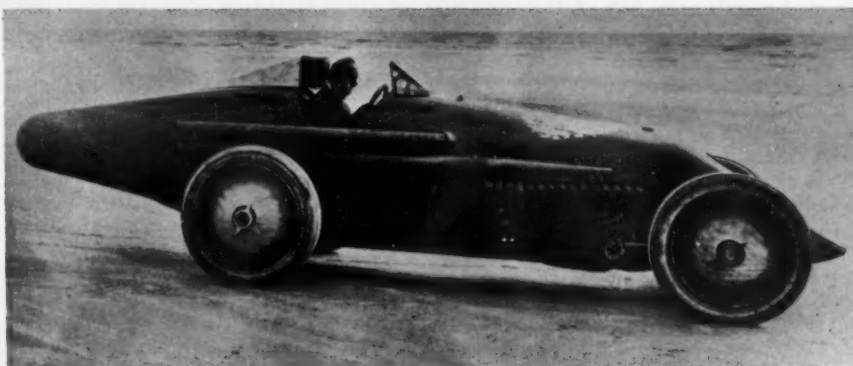
Meanwhile, Milton had a chance to pick up some money racing at Tropical Park in Havana and he took off, sending Murphy and Harry Hartz with the beach car to Daytona to prepare it for the moment of truth. But when Milton landed in Key West on his way back from Cuba he was handed a newspaper with huge headlines that screamed that Murphy had smashed de Palma's record "— on the car," as Milton says, "that I had built and paid for and hired him to prepare. The world has never looked so black before or since, I was sick with disappointment and mad enough to kill when I got to Daytona. It had been the experience of everybody on the beach that you get slower with each run because, with each run, you pump more sand into the machinery. All I could do was send Murphy on his way and try to make the car go faster."

(Continued on page 56)

Jimmy Murphy in Milton's beach car clocked 152 mph. Note headrest and streamlining that was fairly advanced for its day. This was also one of the first times that a wind-screen was used on competition car.



Milton at the wheel after his victorious runs. Upper exhaust pipe passed through cockpit, spoke covers reduced wind drag. Fire on final run left burned spot on hood.



NOVEMBER '58

SCI DRIVER'S REPORT



by Stephen Wilder

Maserati 3.5 Gran Turismo



Maserati frequently comes up with some new ignition idea. This time it's two six cylinder distributors in one.

Whether moving or still, the 3500/T is handsome from any angle.



THIS IS PROBABLY the damndest road test we've ever done. The car involved is the very first Maserati 3500/T Gran Turismo to arrive in this country and naturally we were anxious to see it and try it as quickly as we could. So what happened? On the way to our Eastern test site at Lime Rock, the speedo cable decided to tie itself in a knot. The resulting kink kept the needle wavering back and forth as if to warn us of impending peril. If only we'd paid attention! Undaunted and a bit slide rule happy, we assured one another that if we copied the technique used in the 4.9 Ferrari Driver's Report, timing to the shift points and then computing speeds from known data such as gear ratios and the tire's rolling radius, why then, what's it matter? And so we carried on.

Standing starts were simplicity itself, two strips of rubber appearing on the Lime Rock straight each time. A little delicacy of control with the right foot to avoid extravagance and we were coming up with times varying from 3.9 to 4.2 seconds from zero to the first shift, 8.8-9.4 to the second one while the quarter mile was being covered in from 16.5 to 16.8 seconds. Shifts, incidentally, were made at 5500 rpm in deference to the owners' request, though with twin cams this seems a bit low. To calibrate the tach at high revs, since they are no more than speedos connected to the engine and just as subject to error, we ran through our measured quarter-mile in second gear at 5050 rpm (indicated). This took 16.4 seconds which works out to 54.9 mph or 10.9 mph per 1000 rpm.

So far, so good. But when we got home

and started playing with the slide rule, well, things just got more and more confused. The handbook with the car quotes gearbox ratios of 2.28, 1.68, 1.27 and 1.00 and the rear axle ratio is given as 3.54 to one. We have no figures for Pirellis but the four 6.50 x 16's we do know about (Goodyear, Firestone SS-170 and the Michelin SDS and X) range from 711 to 737, and average 722½ revolutions per mile.

Miles per hour at 1000 rpm is 60,000 divided by the product of the axle ratio, the individual gear ratio, and the tire's rev/mile figure. We get 23.5 mph per 1000 in top gear and 14.0 in a 1.68 to one second gear. But 14.0 into 54.9 means we were doing only 3920 rpm instead of the indicated 5050. I'm sorry but I just don't believe any tach could be *that* far off. If it were and if the error were consistent, then we must have been shifting at only 4270 rpm!

The other clue was the ease with which the 3.5 is gotten off the mark. Cars of this ilk don't spin their wheels easily with an 8.1 overall ratio—especially with big 6.50 x 16's on the rear wheels. For comparison, the S-type Jag with 6.00 x 16's has an overall ratio of 12.2 in first and 7.11 in second. With its bigger tires, getting wheel-spin with the Maser would have been roughly equivalent to doing the same in second on the Jag.

Convinced that something was goofy, we returned to Glen Cove, L.I. to see what we could find out. First we checked the rear axle ratio by jacking up one rear wheel, spinning it twice and counting the revolutions made by the exposed drive-shaft. Three and a half; close enough to

3.54 to suit anyone. Well, maybe the gearbox ratios aren't what we're told they are. How to check? We couldn't very well ask them to take the box out, but the cam covers were off for a routine check of the valve clearances. Let's see. The cams turn at half engine speed, so two times two, mmm, four turns of the back wheel, count how many times the cams turn, divide by 3.54 and that ought to be the ratio for whatever gear you're in. Serge Toumaniantz and Pete Terian, proprietors of Rallye Motors, were willing helpers but even with the twelve spark plugs removed, they felt that this was a lousy way to crank an engine over and would I mind settling for just one turn and multiply by four?

To cut the story short, we came to the conclusion that the ratios were indeed different from those quoted; something on the order of 3.3, 2.0, 1.3 and 1.0 being more likely. Serge offered to send a night cable to Modena to get a reading from them. Their reply was a bit disconcerting. I must say. "GEARBOX RATIOS ARE AS NOTED IN MANUAL." Oh, well, there's nothing like pitting yourself against a mighty industrial empire.

Conclusion? While I don't feel that the last-named figures are accurate even to the two digits shown, I am sure they come a lot closer to the truth than the factory's. Still later checks, getting tach readings in the various gears while driving at a fixed speed were hampered by the unrepaired speedo cable. They, too, confirmed our thesis but lead us to think that the ratios must fall somewhere in between the two sets mentioned.

(Continued on page 50)

NOVEMBER '58

GERMAN GP TRAGEDY AND TRIUMPH

by Jesse L. Alexander



ON THE NURBURGRING, third of August, 1958, Tony Brooks won his second Grand Epreuve and proved that he belongs to that select group of top Grand Prix drivers, for not only does he possess the sheer skill of a master but the fighting spirit that constitutes the will to win as well. Anyone fortunate enough to witness the manner in which he went after the Ferraris of Mike Hawthorn and Peter Collins, cutting away seconds, lap after lap, must have wondered if Tony Brooks will in time become as famous as Juan Fangio is today.

Stirling Moss nipped into the lead during the first lap but held it for only 3½ laps of the 14 mile circuit. The two Ferraris held back, in hopes that Stirling would blow up. Their hopes were answered when suddenly the Vanwall's magneto drive sheared and once again Stirling was forced to walk back to the pits. The two Ferraris now shot ahead, Peter Collins leading, Mike close on his heels.

We watched the race from several vantage points around the 'Ring. One of these was "Fuchsröhre", a super-fast downhill, twisty bit that the cars take as a straight line, the loud pedals of the brave boys flat on the floor. The impression of speed here is nothing short of chilling and it was while we were in this spot that Stirling Moss did his sensational ftd on the third lap, a shattering 9 min. 9.2 sec, or an average of 92.89 mph, a speed we just did not expect to be achieved this year. Looking extremely stable even at this high average, Moss' Vanwall surprised even Stirling with its excellent behavior as he had expected little improvement over last year's Nürburgring effort when the cars were hopelessly outclassed by the Italian machinery. For 1958, the Vanwall had been fitted with shocks giving longer travel, as well as different spring rates, and a strut had been fitted running from the front kingpin mounting to the chassis. Both cars (a third one was not available since Vanwall's had experienced a rash of valve trouble on the test bed recently) suffered from misfiring in practice and Brooks' car was given a valve grind on the even of the race. Despite this, a definite misfire was observed on his Vanwall between five and six thousand rpm during the race. Brooks pressed on, however, with a now or never attitude written across his face, slowly but surely whittling away at the Ferraris until he was breathing down Hawthorn's neck. Brooks' fastest race lap was a fantastic 9 min. 10.6 sec, done on the tenth lap when he finally nipped in front of Collins' Ferrari.

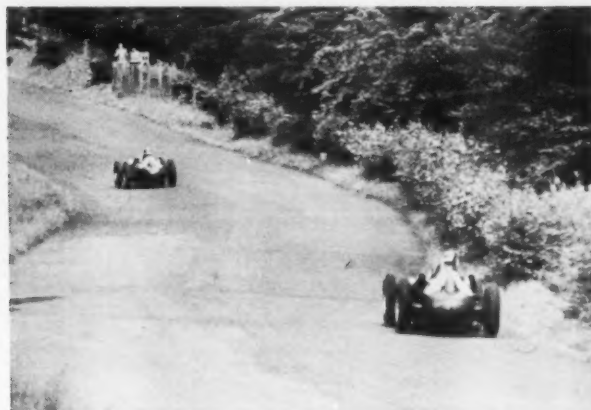
Watching the Ferraris charge down the "Fuchsröhre" cute and then climb slightly through two fast right and left handers, things looked very hairy indeed. Hawthorn and Collins nose to tail for more than five laps, they would pass and repass each other on the straight past the pits, then the lead would change again as they stormed up the back straight behind the pits. Suddenly Mike caught a glimpse of the green Vanwall charging down behind him, and the race tempo began to rise. However, the Ferraris could not lap much quicker than 9 min. 14-9 min. 15. Then came the thrill for the massed crowd now on their feet. Brooks repeated exactly what Fangio had done last year towards the close of the German Grand Prix. He left his braking later



Ferrari pits always attract a crowd. At bottom left, Peter leans casually against fence.

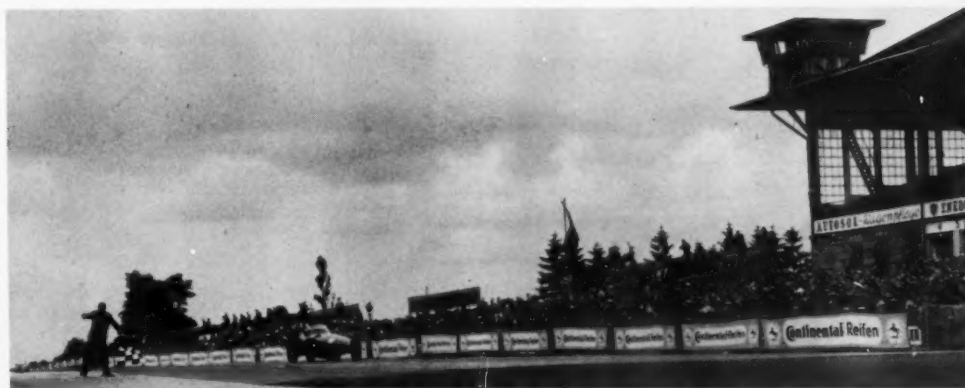


Brooks, Vandervell & Moss after race.



Collin's Ferrari leads Hawthorn's down the Fast "Fuchsröhre" chute.

Winner of the '58 GP, Tony Brooks and the Vanwall take the checkered flag, at an average of 90.35 mph, despite a not-quite-perfect engine.



than the Ferraris at the end of the straight behind the pits and nipped past Mike Hawthorn, then on the next lap he repeated the same maneuver, passing Collins to take the lead.

With Brooks in the lead, a deadly serious battle reached its climax. Peter Collins, right on the limit all the way around in a maximum effort to catch Brooks, left the road at "Pflanzgarten" at terrific speed, the Ferrari rolling, ejecting Peter violently. Before they could get him to the neurological clinic in Bonn by helicopter, his heart could not stand the strain, and he died en route. It seemed incredible that tragedy could strike the Ferrari team twice within a period of 30 days. Peter's death had a shattering effect on all of us and it overshadowed any joy we might have felt with the unexpected and brilliant win by Tony Brooks. Mike Hawthorn's Ferrari now became sick and it finally stopped

out on the track, leaving the Vanwall to tour around the three remaining laps.

Second was Roy Salvadori's 2.2 liter works Cooper-Climax, finishing third was Maurice Trintignant in Rob Walker's Cooper, and fourth, the lone Formula 1 Ferrari to finish, Wolfgang von Trips, without any brakes for two thirds of the race.

The Ferraris had been fastest in practice, but Brooks had been only one second slower than Hawthorn's 9 min. 14 sec. while Moss had registered a 9 min. 19.1 sec. Interestingly enough, Ferrari had brought the car that Phil Hill had driven during the first heat of the Monza 500 race, a new car, built around the Dino chassis but with a Super-Squalo type body. Mike Hawthorn was extremely quick with this

(Continued on page 52)



The easy driftability of the new A-H two seater is demonstrated here. The car is proceeding at full noise in third gear around the 180-degree turn at Lime Rock. Notice that the front wheels are pointed dead straight virtually throughout the radius of the turn. Visible roll is hardly perceptible to the driver.



AUSTIN HEALEY 100-6

EXACTLY ONE YEAR AGO SCI scooped even the English automotive magazines with Dennis May's report on what was then known as the Mille Miglia Austin Healey and now familiarly known as the "six-port." Dennis had ambled down to Warwick for a talk with Geoffrey Healey and had been dropped into the cockpit of the factory Mille Miglia car with instructions to play.

The car had some 16 miles an hour over the older two-port. By the time our London correspondent had gotten a few test miles and a full charge of acceleration runs under him, Geoffrey casually dropped the news that this was to be the 1958 production car. Thus it was that SCI actually road tested a '58 Healey in 1957. In the same story, Dennis also

dropped the hint that the Healeys were once again building a strictly-for-two version for those who could do without the nursery that was designed into the original 100-6.

Since SCI's original report on the MM Healey, things have been happening. Perhaps the most noticeable is that the Austin Healey, which once formed the also-ran field in U.S. racing, being at various times and at various places soundly thumped by two-liter opposition, is now a front contender in class D and E production events. In the capable hands of Dick Thompson, a certain white A-H 100-6 has given even such formidable machinery as Ace Bristols a very rough time indeed. At Sebring a team of three copped the team prize and a class win and toward the end of the 12

hours were able to play games with the GT Ferraris which, though admittedly somewhat faster, had seemingly less lasting power. The Healeys on the other hand were running better at the end of the grind than they had run at the beginning. Which is the case in point.

Over the last four years Donald Healey and BMC have evolved a sports car that is as near to being unbreakable as a car can be. The 100-6 in its present guise can be, and is in most cases, driven hundreds of miles to a race, field-stripped, run in a hard 20 to 50 mile event, loaded up and driven home without a sign of wear or trouble. In some cases not even a plug change is needed. This holds true even when the car is set up primarily for competition with rich carb needles, soft piston rings and the optional high-lift cam.

The cars that played havoc with their class at Sebring were virtually stock machines with only minor exceptions all of which are available to the competition minded customer and most of which are designed more to enhance reliability rather than add to straight performance. All three have since been driven on the street and in several races and not one has so much as had the head lifted. One has had the oil cooler disconnected and two have had air cleaners installed in place of the cold air box. One was driven across country to California after having been driven to New York. Another has been driven in three National SCCA events and several regionals and club races and has been a front runner in every case yet it is driven daily as well as to the races. About the only sign of wear in any of these cars is a compression reading that is down a few pounds uniformly from that which they showed when fresh off the boat and the slightly scuffed exterior that a season of racing and road use begets.

There is a good reason for all this unburstability. If the bodies on the current Healeys were not made with large pieces of aluminum in such places as the hood and rear deck, and if the interiors were plushier, they would be heavy machines indeed. The chassis is seemingly put together like the main trusswork of the Golden Gate bridge. When you look at the solid, chunky box construction you get the idea that it would take a bulldozer or a tank to bend it, which is very nearly the case. Suspension elements are equally meaty though attention has been paid to keeping unsprung weight down to a reasonable figure. The result is that an Austin

Healey that has been involved in an incident either on the road or the race course can look like a wrecking yard case and yet still be driveable.

The first 100-6 engines were absolutely straightforward BMC C-Type engines designed originally for the Austin A-95 and the twin carbureted A-105, lifted directly out of Engines Branch and dropped into the A-H. While dead smooth, these early sixes had little more punch than the lumpier but lustier four-barrel that was developed from the A-90 Atlantic engine. For 1956, as outlined in our earlier report, the Healeys and freelance engineer Harry Weslake came up with a new six-port (12-port if you count the exhaust outlets) head that did away with the integral two-inlet manifold in favor of a big squared-off log type pieces of plumbing that took a pair of large H6 S.U. carbs with throat bores of 1¼ inches — up a quarter inch over the older set-up. It also effectively increased the intake ram by increasing the distance from the carb to the intake valve by two inches. Valve sizes were up a sixteenth of an inch on both intake and exhaust in the new head. This was the major change but the results made it seem like an entirely new engine. It still has that same smooth surge of power through the entire rev range that marked the early six but it turns on with a satisfying punch in the shoulders that the older engine lacked. The factory also allows an extra 400 rpm, the tach being red-lined at 5200 rather than at 4800 as on the '57 version. Actually the true figure is more like 5500 rpm for competition work. Even at that figure it's still not overstressed, piston speed at maximum bhp being only 2800 feet per minute, a singularly low figure for a sports car engine.

Our test car, supplied by Hambro Automotive Corporation, only had about 500 miles on the clock but it would twist its 5500 happily though perhaps not quite as quickly as it would with a few more miles of running in. Still the temperature went quickly up to 175 degrees and stayed there for all but the acceleration runs when it went to 185, a good indication that it wasn't unhappy with heavy throttle stomping at any point in the proceedings.

We quickly discovered that this is a torque-producer second to none in its class. Too exuberant throttle work coupled with a quick clutch let-up produces only the sound of tortured rubber and a consequent lag at the go-off — you just sit and scratch until you let up on the tap. The way to get the

Longer rear deck line distinguishes the new two-seater from the four-place Austin Healey. Except for minor details of windshield and trim around cowl the new car is similar in outline to the familiar four-barrel version.



A-H off the line either in the stoplight grand prix or in a race is to wind up to no more than 2500 rpm and drop the clutch in smooth and fast, producing only a short chirp of rubber at the back wheels. Done properly the car lunges off with a smooth rush that seems to last and last and last.

Like almost all BMC gearboxes in recent years, this one is a pleasure to use, upshifts and downshifts being made instantly and smoothly. While the synchromesh can be beaten, it takes muscle and lots of energy. Our test car was equipped like almost all Healeys with overdrive and a 4.1 to 1 rear axle gearing. Overdrive third produces just a shade lower gearing than does fourth direct, OD third producing a final ratio of 4.25 and fourth direct, of course, being 4.1. The time lag of the Laycock de Normanville OD unit is seemingly non-existent but it's there—about equal to a well-made manual shift in fact. The result is that using third and third OD for acceleration is no quicker than using third and fourth gears with the OD unit switched off. Fourth OD is an extremely high ratio of 3.198 to 1 and is useable only for high speed cruising. While (for a happy change) the

engine will peak in fourth OD there is almost nil acceleration except on level ground.

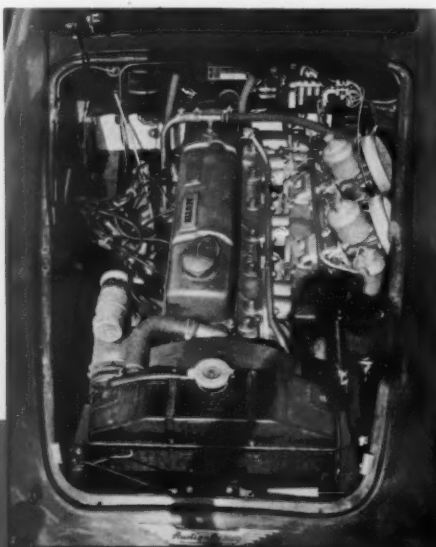
In competition use of the overdrive unit is ill advised for two reasons. First, it isn't designed to take the pounding and you *can* break it through abuse and second, manual shifting is more positive and controllable. On long airport courses OD fourth might come in handy where there is time to wind out and cut back, but on very tight road courses one is better off leaving the switch alone. But for cross country cruising this overdrive unit is ideal. City traffic can be handled nicely with third and third-overdrive except for major jams. Open country and fast travel are perfect for top and high overdrive, using fourth direct for passing, OD with its economy the rest of the time.

Austin Healeys have always been noted for their excellent handling characteristics and the newest 100-6 is no exception. If anything it handles better than previous models, at least one of which had a spooky tendency toward rear-end skitter on bumpy or wet roads when a shade too much throttle was given. This has definitely been eliminated in current models.

Cockpit has changed little in Healeys over the past few years. Roomy and yet functional, only details needed change.



Latest version of the muscular C-Type 6 puts out 120 bhp and options can be had to bring this up another 27 at 5000 rpm.



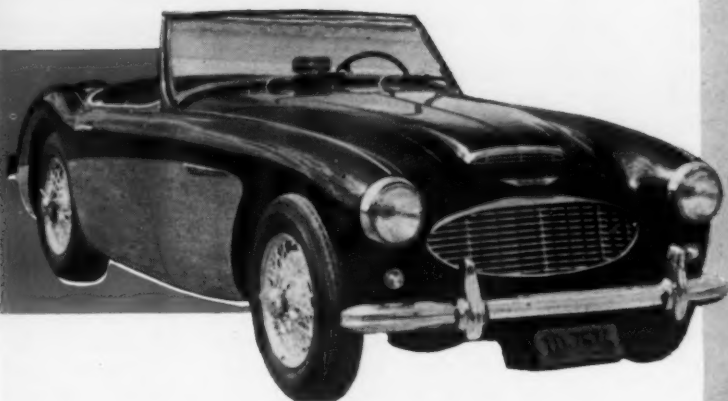
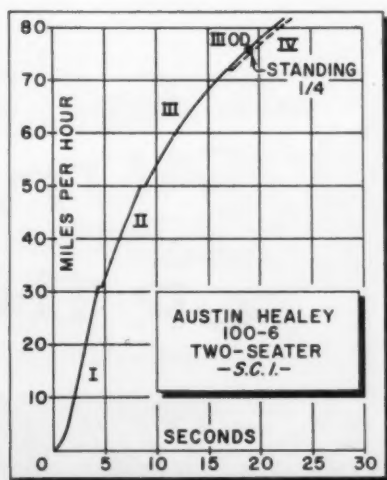
Luggage space has been increased through removal of spare wheel forward onto shelf behind seats.



Photos by Don Typond

That heavy frame and light body combination has much to do with the A-H handling. Make no mistake, it can and will slide but there is never the feeling that the thing is going to tip. It's a driftable car and properly controlled this driftability can be used to advantage in getting around both tight corners and fast bends. Too exuberant sliding, however, can result in incidents. That low center of gravity (the frame runs under the back axle in classic British tradition) also provides a low roll center, the result of which is that if the tail is allowed to poke out too far there's no getting it tucked back in. Once it starts to go there's nothing to do but hang on and let'er rip, which it will do in a long gentle sweep. There's nothing particularly nasty about it — it's not a sudden snap or whipping. And there's little or none of that "it's going to dump" feeling. You get the idea that the car will do its level best to hold you safely upright even though you've been damn' fool enough to spin it through your own ham-fisted lack of driving ability. You feel as though you ought to apologize to the car. On the record, Healeys have been haybaled, spun and looped but few have flipped.

(Continued on page 52)



AUSTIN-HEALEY 100-6 TWO SEATER

Price at POE \$3389
U.S. Importer: Hambro Automotive Corp.
27 West 57th St.
New York 19, N. Y.

PERFORMANCE

ACCELERATION:

From zero to	seconds
30 mph	4.2
40 mph	6.4
50 mph	8.4
60 mph	11.9
70 mph	15.9
80 mph	21.5
Standing 1/4 mile	18.8
Speed at end of quarter	75 mph

SPEED RANGES IN GEARS: (800-5200 rpm)

I	5-31
II	8-50
III	11-72
III OD	14-82
IV	15-96
IV OD	19-top

SPEEDOMETER CORRECTION:

Indicated Speed	Timed Speed	Indicated Speed	Timed Speed
20	22	50	46
30	29	60	57
40	38	70	65

FUEL CONSUMPTION:

Hard driving (racing conditions)	11 mpg
Average driving (Under 60 mph)	25 mpg

BRAKING EFFICIENCY

(10 successive emergency stops from 75 mph, just short of locking wheels)			
1st stop	70	6th	70
2nd	80	7th	75
3rd	75	8th	75
4th	72	9th	80
5th	75	10th	75

SPECIFICATIONS

POWER UNIT:

BMC C-Series	In-line six, water cooled
Valve Operation	pushrod overhead valves, in-line
Bore & Stroke	3.15 x 3.51 in. (79.4 x 89.0 mm)
Stroke/Bore Ratio	1.13/1
Displacement	161 cu. in. (2639 cc)
Compression Ratio	8.25/1
Carburetion by	Two B.U. 46
Max. Power	123 bhp @ 4800 rpm
Max. Torque	147 lbs.-ft. @ 3000 rpm
Idle Speed	800 rpm

DRIVE TRAIN:

Transmission	Direct	Overdrive
Drive	Drive	Overdrive
I	3.08	(—)
II	1.91	(—)
III	1.33	(1.83)
IV	1.00	(0.78)
Final drive ratio	4.10	(3.91 without OD)
Axle torque taken by rear springs		

CHASSIS

Wheelbase	92 in.
Tread, front and rear	48 3/4, 50 in.
Front Suspension	Independent, coil spring and wishbones, anti-roll bar
Rear Suspension	Rigid axle, semielliptic leaf springs, Panhard rod location
Shock absorbers	Lever and piston
Steering type	Cam and peg..
Steering wheel turns L to L	3
Turning diameter, curb to curb	35 ft.
Brakes	Girling hydraulic, 2 LS front
Brake lining area	168 sq. in.
Tire size	5.90 x 15
Rim size	45 x 15

GENERAL

Length	157 1/4 in.
Width	60 1/2 in.
Height (Top up)	49 in.
Weight, as tested	2750 lbs.
Weight distribution, F/R as tested	48/52
Fuel capacity	14.5 U.S. Gallons

RATING FACTORS:

Specific Power Output	0.76 bhp/cu. in.
Power to Weight Ratio	22.4 lbs./hp.
Piston speed @ 60 mph	1900 ft./min. (1480 in OD)
Braking Area	137 sq. in./ton
Speed @ 1000 rpm in top gear	185 mph (23.7 in OD)



The Denzel Kit—

By O'Ceer Ritch

RECENTLY, while hedge-hopping an MGA after a little pre-race tuning, we pulled up at an intersection alongside one of the multifarious gray Volkswagens that dot the Los Angeles traffic pattern. The driver, a blond teutonic type, nodded pleasantly and, as the signal went green, applied the throttle vigorously. The MG also responded to pressure, and we got away from the corner at a lively rate. Surprisingly, the VW stayed alongside, dropping back only slightly at the shift into second, and failing to dwindle away in the rear vision mirror as other of its ilk are prone to do.

With due respect for law and order, and speed traps being what they are, the contest didn't get into the upper reaches of the speedo. But at the next signal light the tableau was repeated, and the VW maintained respectable contact till prudence again dictated that we back off. Needless to say, such a display of fierceness from the harmless Beetle aroused considerable curiosity, and we asked the driver at the in-

VOLKSWAGEN

evitable stop sign if he had a Judson supercharger on the Volks.

"No. Denzel," he said.

"Never heard of it," we said.

"Fifty-four horsepower," he said, in a noticeably German accent.

"How about a look?"

"Certainly."

This was our introduction to a modification which seems to be a tremendous boon to the "Minicar for Many People" . . . the Denzel 1300 conversion kit.

Most of us are both familiar with the virtues of the VW and cognizant of its major shortcoming: lack of power. Deliberately held down in output for gain in economy and reliability, the 36 hp air-cooled four-banger that nestles in the tail of the tin bug irritates the Native American Boy with its listlessness. Accustomed as we are to the finer things in the horsepower market, we seethe inwardly at the helm

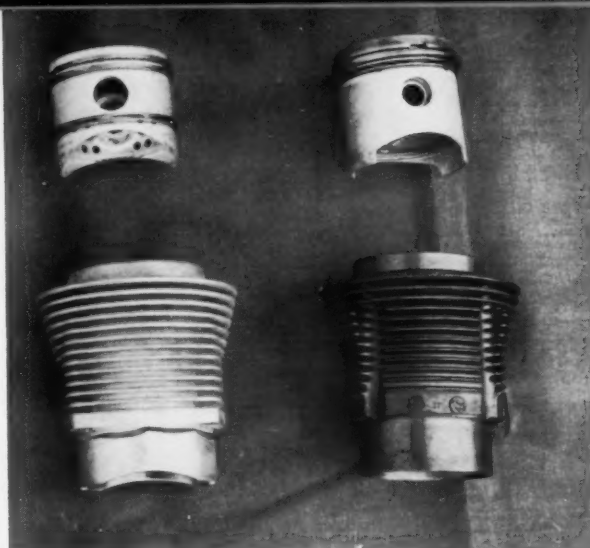
of one of these little monsters when we are left standing by ordinary clunkers having none of the VW's more virtuous attributes. The necessity for crawling up grades in 3rd at a reduced rate, or being held almost stationary by strong breezes sometimes makes us forget that we are stormers on curves, gasoline mileage and resale value.

A constant battle wages in the breasts of many Wagenfolk where the urge for more torque fights against warnings from the factory that to tamper is to destroy. A number of owners have gone against the grain and installed outside aids such as superchargers, and the more recent Okrasa kits. And, since dire consequences have failed to materialize in most instances, hopping up is becoming legit. As with the Porsche, though, untutored fiddling can produce horrible noises and expenses. Random rodding is still inadvisable.

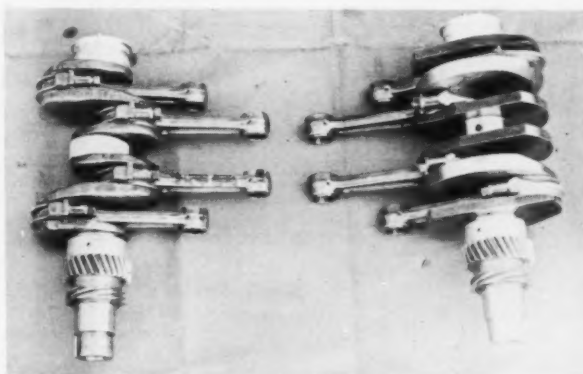
The Denzel 1300 conversion, in addition to giving better performance than other hop techniques, gives, in effect, a completely new engine. This takes the curse off of it. There is no stigma attached as would be the case with milling and filing or boring and stroking.

The pleasant, blond, germanic type at the wheel of the vigorous Volks was actually an old acquaintance, Ewald Olbrich, of Hannig & Olbrich, foreign car service experts in California's San Fernando Valley. His VW was the first to be Denzelized, and when we met on the street he was breaking it in before trying it at the San Fernando Drag Strip.

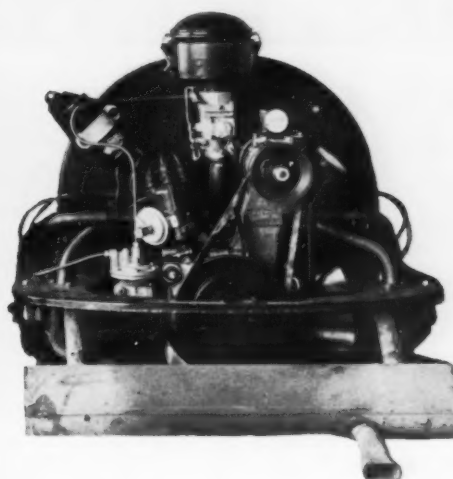
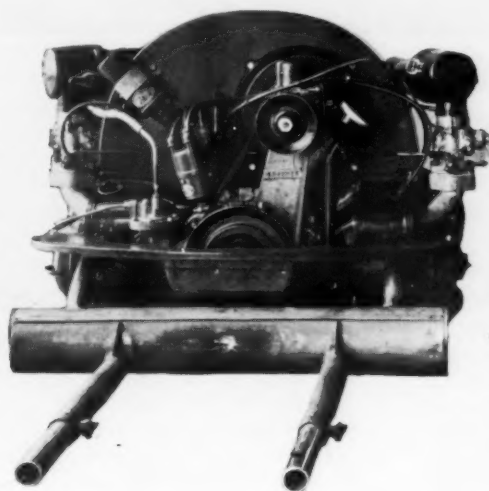
Under the lid, the VW bore few outward signs of its new-found authority, except for the two Solex 32 PBI carburetors and a different sparkplug arrangement. At the strip, however, the improvements became obvious. With only a few hundred miles of running in, the sedan turned 66.37 mph in the standing quarter, as against 55 for the average VW. In a choose-off with an MGA Ewald was beaten only slightly during a trip in which the "A" registered 68 on the clocks. Such dragstrip trials are the yardstick in those parts as to effectiveness of engine and gearing modifications, and make



The Denzel piston and cylinder, left, shown with the stock VW set. Below, the fully counter-weighted Denzel crankshaft has same size mains, but bigger rod bearings.



Vitalized VW on left. Most obvious difference is carburetor arrangement, closer look reveals larger cylinder shrouds. The rest is all inside.

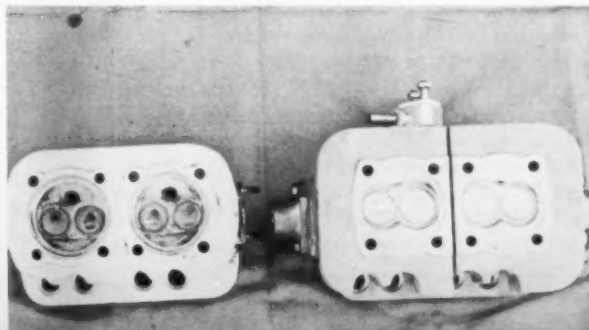


Denzel head on right has larger valves, altered combustion chamber, relocated spark plugs, and increased fin area.

possible accurate comparisons from week to week. An improvement of roughly 12 mph or 22% is impressive, to say the least. Regardless of top end or other considerations, here is something worth investigating.

To conduct the investigation we repaired to the Hannig & Olbrich shops, where a number of the Denzel kits have been installed . . . but only after Fred and Ewald had satisfied themselves that the very first job was satisfactory. With typical thoroughness they checked out the initial engine in meticulous detail before ordering more of the Viennese equipment. We followed a subsequent installation from unpacking the crate to test driving the car, and it appears that it could become a do-it-yourself project for anyone with a

(Continued on page 54)





the fastest race in history

By Jesse L. Alexander

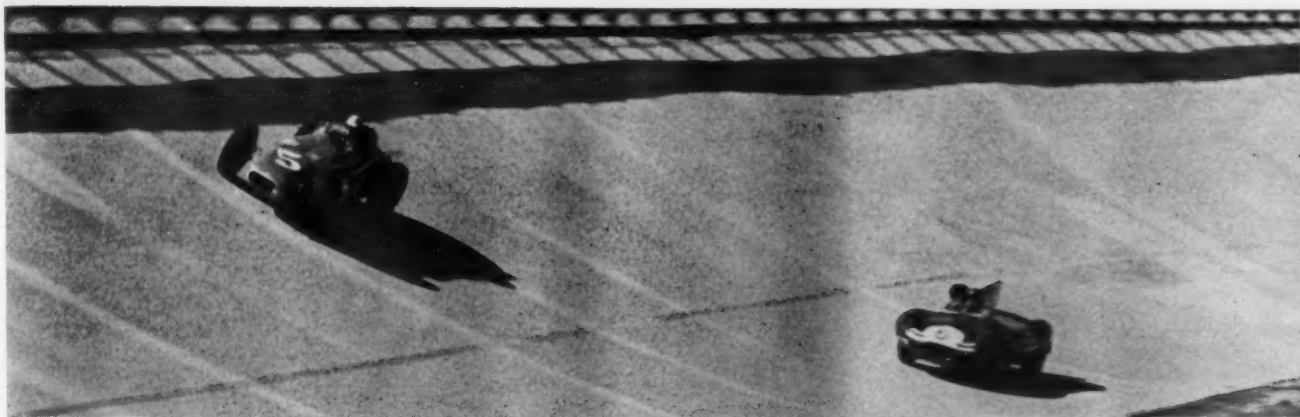
IT WAS REALLY a "Race of Two Worlds" at Monza. Last year's "500" suffered from a lack of European participation; but as the time for the 1958 race approached all the unpleasant voices we heard last year were amazingly silent. Among the first to apply for an entry was Stirling Moss. Ecurie Ecosse came back, of course, not only with two specially prepared D-type Jaguars but with a single seater as well.

From Maranello came word that Enzo Ferrari was building two cars for the race, his arm having been twisted by the sporting commission of the ACI, and in Modena engineer Alfieri had the plans all drawn up for a Maserati, if some one would pick up the tab. Prize money was high, and the resultant international drawing card included names like Moss, Bryan, Ruttman, Fangio, Trintignant, Sachs, Schell etc., on the program.

And so it was on June 29, 1958 that we witnessed a fantastic display of high-speed motor racing around the famous and controversial Monza bankings. The race average was 166.72 miles per hour and victorious Jim Rathmann became the first man to run 500 miles in less than three hours. The winning speed was six mph faster than last year's, and this time surpassed the pre-war Avus record to become the fastest motor race in the world.

The Hawthorn/Musso/Hill Ferrari finished third, after giving a fine account of itself. Stirling Moss in the Eldorado-Maserati finished seventh despite broken steering on the 41st lap of the final heat. The car slid up to the top guard rail, bounced off, and stopped safely at the bottom of the banking. Moss was unhurt.

The Indianapolis cars came to Monza better equipped than they were last year, and there was enough prize money to induce a pace that made even Big Jim Bryan question the wisdom of it all. Rathmann, in the victorious Zink Leader Card Special, led for all but ten laps of the first heat. He led the entire second heat, too, and the third as well, except for one lap when the timekeepers caught Bryan's wheel slightly ahead of Rathmann's as they charged down the straight at well over 180 mph. During the first heat, the late Luigi Musso actually led the first lap, and also on the third, fourth and tenth as well, as he duelled side by side with Sachs, Rathmann and Bryan. At one point Luigi was unable to push through the group, so he roared by on the left hand side. This forced him over the yellow deceleration line, but Luigi put his foot down and went on, as officials and police madly jumped aside. This was a type of spectacular motor racing just never before seen in Europe, and the crowd loved it.



This looks like last year, but this time others besides Jaguar came. American chassis held together better, too.

Stirling Moss found by the middle of the second heat that he need not take anything from the American drivers, and at one point he pushed the Eldorado for all it was worth in a dice with Bob Vieth for second place. Moss, too, and Hawthorn, roared side by side down the straightaway. However the Europeans were quite honestly out-equipped, despite the effort of Ferrari and Maserati.

Rumors of European participation at Monza for 1958 were rife throughout the spring, with word that Ferrari was building a special chassis and that Maserati had a car on the boards that they would gladly build for a sponsor. Luckily, Italy's Eldorado ice cream company decided to pick up the tab; and in true Maserati fashion, the "Eldorado-Italia" as it was called, first saw the light of day on the Monza bankings just a few days before qualifying trials were scheduled to begin. It was a powerful, solid-looking brute, painted white and carrying the Eldorado mascot on its nose. A 4.5 V-8, sleeved down to 4.2 was installed offset to the left, in true Indy fashion, into the rugged tubular chassis. A completely new 2 speed gear box had been designed with the selector lever lying in a horizontal position shoulder-high to the left of the driver. The de Dion rear suspension incorporated a transverse leaf spring assisted by heavy-duty Houdaille shock absorbers. Front suspension was Maserati with wishbone and coil springs, but everything just a bit heavier and more rugged than thought necessary. Brakes and suspension units were similar to the 4.5 sports car and 250 F components.

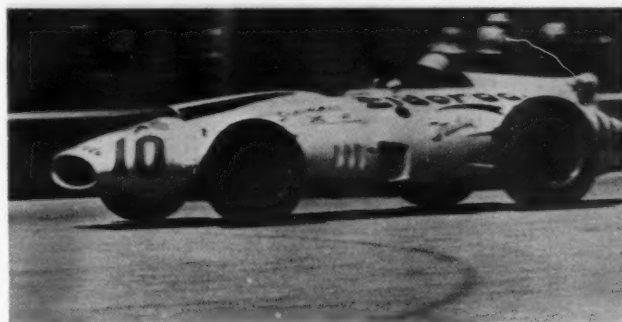
The 4.2 V-8 running on alcohol was putting out well over 400 bhp but was not fitted with a rumored Bosch injection system. Stirling qualified the Maser at 164.022 mph, the huge white beast looking solid and very safe out on the bankings.

It was up to Luigi Musso to uphold the honor of Italy. He started going during qualification and astounded everyone by setting up the fastest overall qualifying time, turning his 3 laps at an average of 174.267 mph. The Ferrari sounded extremely healthy, although it was obvious that the car

(Continued on page 64)



Stirling's high-speed Good Humor wagon broke its steering on the 41st lap of last heat. It bounced off the top guard rail, then stopped safely at the bottom.



Indy cars seem ideally suited for the Monza bankings. Jim Rathmann is now first man to run 500 miles under 3 hours.



SCI **TRACK TEST**



250 testa rossa

FERRARI

By Griff Borgeson

FERRARI'S 12 cylinder, three liter Testa Rossa is a very exceptional machine. At this writing, with four races yet to be run in the 1958 world's championship for sports cars, the 250 TR already has won the title. Among its many distinguished victories this year are the 24 hours of Le Mans, the 12 hours of Sebring and the 1,000 kilometers of Buenos Aires — all very hard, telling races. Its achievements take on added glory when it is noted that:

1. The engine design is that of the original Ferrari V12 and now is approaching its twelfth year of active life;

2. The 250 TR basically is merely a tuned, competition-bodied version of the firm's series-production 250 Gran Turismo road model;

3. It sells at U. S. port of entry for \$11,800 while competitive cars in this class traditionally have sold for from about \$3,000 to \$8,000 more.

The opportunity to track test a representative specimen of the competition sports car of the year was offered us by Richie Ginther, director of Ferrari Representatives of California, in Hollywood. The silver-gray roadster was well broken in. John von Neumann had taken it on its first outing in Buenos Aires where he was running fourth overall when the ring and pinion went, which is not at all unusual on that bumpy course. He and Richie then drove it at Sebring and after ten and a half hours were running third overall when the new ring gear dropped a tooth. Next Richie, in

admittedly sour form, drove it to third overall at Santa Barbara last summer. Von Neumann then won Vaca Valley with it handily and Richie gained third overall in the Nevada Grand Prix for sports cars. In all its west coast outings it has had to contend against cars of much greater piston displacement and the combination for optimum handling has yet to be found.

Just before the Nevada races Richie and I took the 250 TR to the Pomona course, one of the best in the country for evaluating a car's handling qualities. It has nine turns, all of them flat, all of different radii. Some have bumps over which a good chassis handles and a poor one leaves the ground. How handling nullifies cubic inches at Pomona is illustrated by Ginther's experience there with the older, two liter, four cylinder Ferrari TR. He raced it at Pomona three times and finished third, second and first, consistently beating much larger cars that were winning everywhere else. This seemed to prove that larger cars are handicapped at Pomona and we were eager to see to what extent this would apply to the three liter 250 TR.

We unloaded the car from the van and Ginther asked me to get it warm while he unloaded extra gear. With a twist of the ignition key the engine fired immediately and settled down to a deep, thundering idle at 1,100 rpm. I motored around the course at 3,000 in second until oil and water temperatures reached working levels, immediately noting

*Probably the most-raced 250 TR
in the States, our track test car (below)
is driven by Richie Ginther. He shared it with . . .*



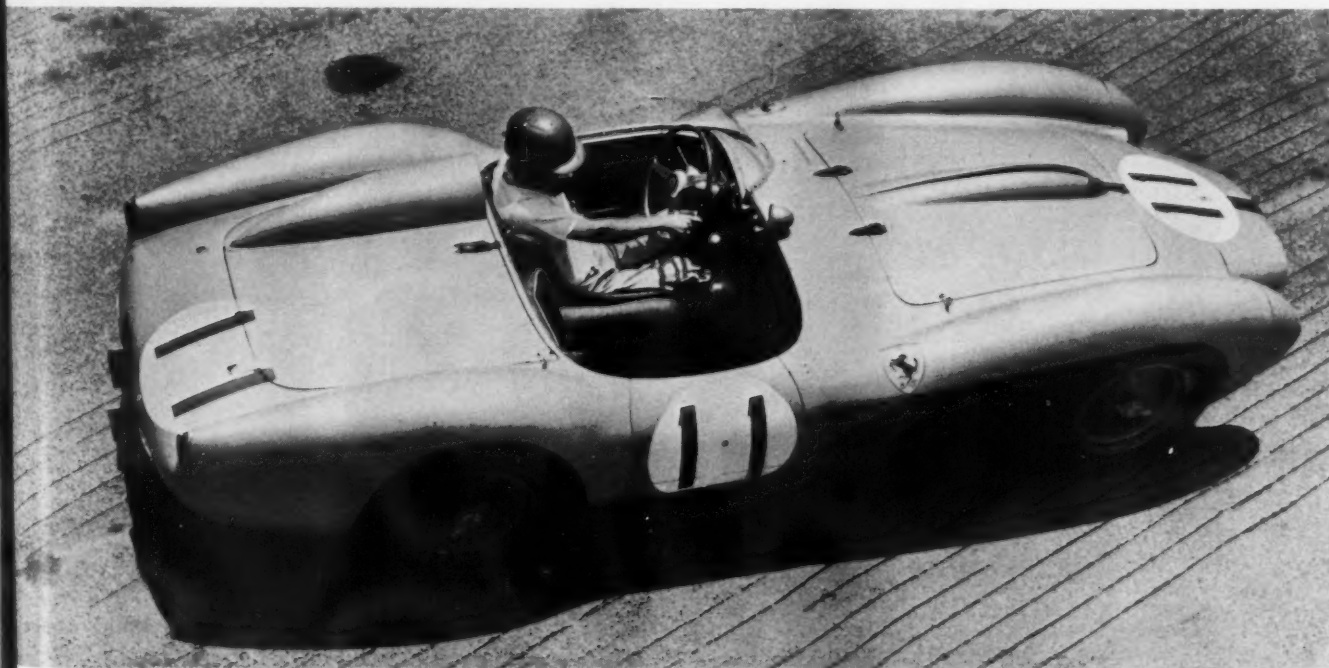
*. . . Johnny von Neumann at Sebring
where they held third til the 168th
lap when a gear tooth broke off.*

that its steering is extremely light by previous competition Ferrari standards. Although the ZF gearing is identical to that of the 250 GT the TR's steering feel is much heavier at low speeds, probably entirely due to its larger caster setting. The TR's ride is quite non-typical of previous Ferrari practice; it was definitely soft even with 40 psi in the tires all around. Bumps certainly were palpable but by no means harsh or jarring. The Porsche-patent, full synchro transmission also is identical to that of the GT model except for a few superficial differences. One of these is a shifting gate with a safety latch on reverse and with slots machined so closely that the engagement of any gear calls for what amounts to a press fit of the shift lever in the slot. This makes for real precision in the positioning of the lever.

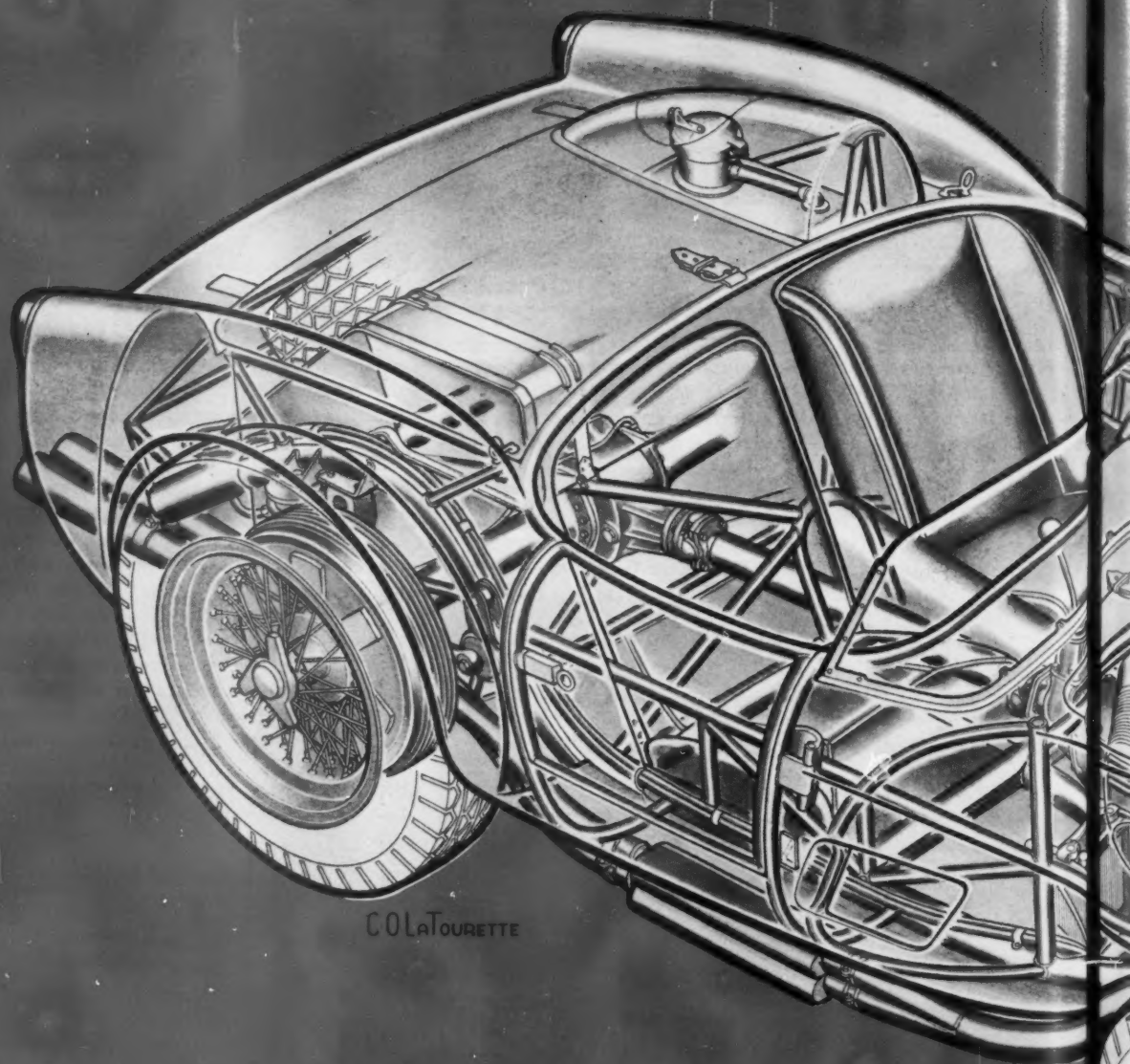
With temperatures up and hard plugs installed we ran acceleration times. The car is not equipped with a speed-

ometer but it is a matter of simple arithmetic to calculate the rpm reading that equals any given mph figure in any gear; this can then be checked over a measured quarter mile. The hesitation inherent in the chronometric tachometer is not conducive to ultimate accuracy here but can have little effect on our one-decimal times.

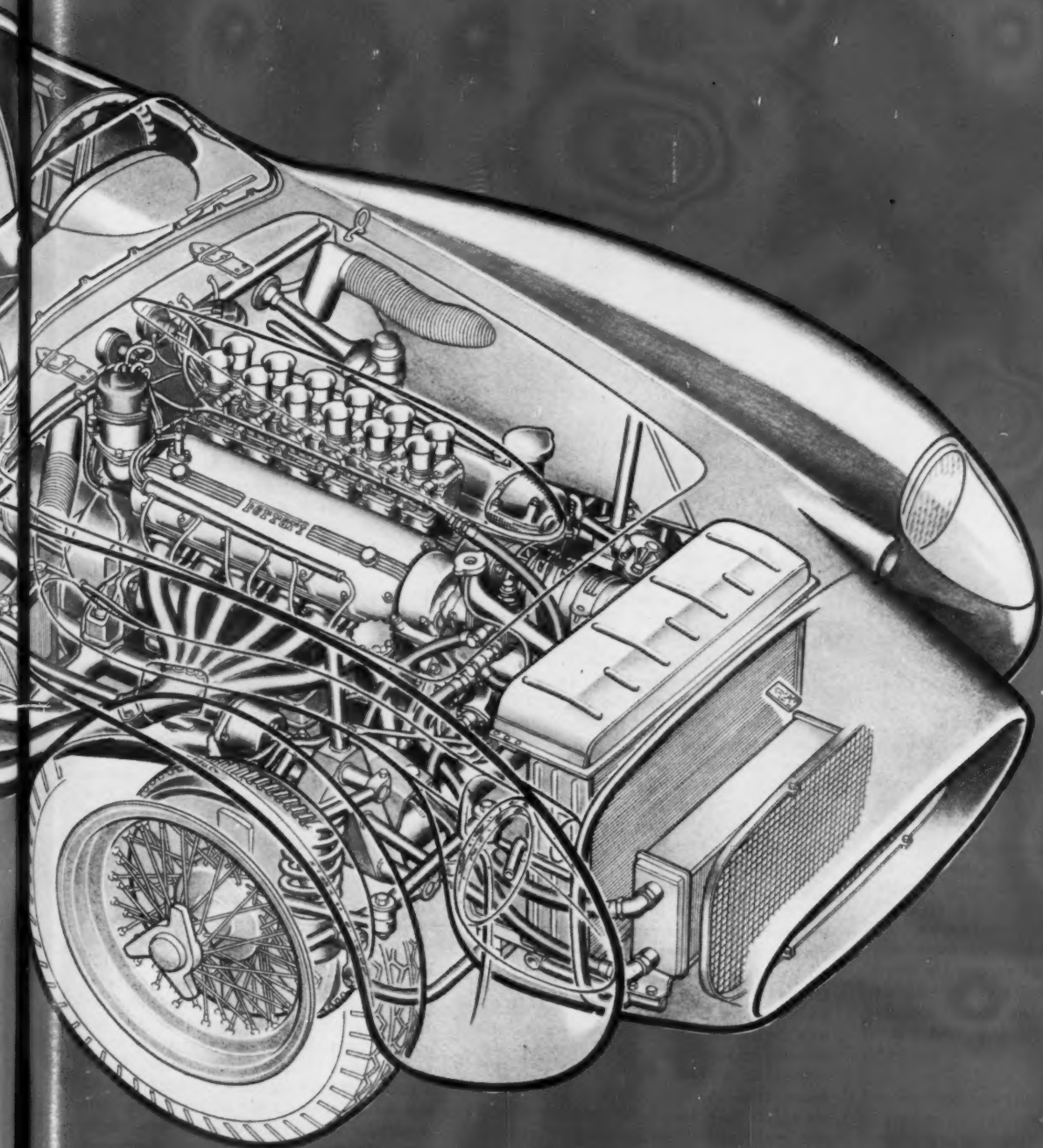
Ginther brought the engine up to 4,000 rpm and, letting the clutch out just slowly enough while opening the throttle, made smooth, charging getaways with hardly a trace of wheelspin. For a three-liter car the TR's thrust is terrific almost from the instant that the clutch bites . . . but when the cams come in at about 6,000 the car suddenly catapults forward. Its violent, brute strength is hard to get used to; it seems to charge as strongly at 100 mph in third as at 10 mph in first. And the vigor of the thrusts lasts right out to the 7,200 rpm peak before beginning to decline. Geared as our



No monster-machine, the three liter TR is one of the handsomest cars on any course.



COLATOURETTE





test car was with its 4.25 final drive, we had little chance to feel out its fourth-gear performance: by the time we had roared up to 117 in third, at least one-third of the Pomona straightaway had been used up. After just three or four seconds in fourth the downshifting began for turn one. But in fourth, too, the 250 TR's pulling power was startling.

But its handling qualities are even more so. By the standards of most mortals they are fantastic. As already noted, smaller cars always have had the advantage at Pomona. The lap record — let's call it the unofficial one, just to avoid controversy — was set by Ginther in a two-liter TR at 1:21.8 seconds. But during our shakedown runs in the three-liter Richie did some very purposeful driving and turned lap times down to 1:20 flat against accurate watches. The extra steam of the larger machine was a factor . . . but the improved chassis of the new TR was even more responsible for these rapid times.

It will be said that this was done on an empty course and that slower times would be inevitable in the traffic of an actual race. But this is untrue more often than not: there is no substitute for the psychological stimulus to competitive driving that is provided by a field of serious contenders and by tangible rewards for the winner. Ginther should have little trouble in clocking 1:19 or less at Pomona, given the stimulus of actual competition.

The 250 TR is fabulous in fast turns. For sweeping turns 1 and 2 at Sebring Richie would place the car, floorboard the throttle with the transmission in top gear, and hold it that way all the way through. His speed at the apex was guessed to be between 120 and 140 mph but he never could begin to approach the car's limits there and he never had the remotest feeling that the car would do anything but track around the line in which it was pointed. Those are about 130-degree bends; the car is equally secure and stable on 90-degree medium speed curves.

But the 250 TR does have its handling shortcomings at the moment (this specimen has, at least) and they show up in the low speed turns. Yet they do so only when the absolute limits of adhesion are being reached. Not many drivers ever operate on this razor's edge but those who do will find that the 250 TR (as represented by this specimen, again) plows with its front end. It pushes out: it understeers to a decidedly undesirable extent. Weight transfer to the front end, due to braking before the car ever gets to the turn, influences this. A higher front-spring rate should help, a stiffer anti-roll bar would not, and Ginther has found that juggling front tire cross-sections does no good. He feels strongly that this extreme-limit condition can be helped immensely, if not cured, by finding the correct combination of tire inflation pressures.

This was the story of the early Testa Rossa. It took time to discover that optimum handling resulted when the rear tires

were just a couple of psi harder than the fronts. Variations on this theme were tried on the new TR without causing any improvement. At Pomona we ran equal pressures all around and there was marked improvement. In Nevada Ginther decided to reverse the old combination and, with the front tires four to five psi harder than the rears, the understeer effect vanished almost entirely.

Richie points to this as an ideal example of our lack, in this country, of racing versatility and sophistication; of the difficulty we have in moving from one machine to another and making the necessary interpretations and adjustments quickly. An experienced first-class European driver would sense the solution to a problem like this instantly, while the factory engineer might have foreseen it and its cure before the car ever ran. Our experience is more limited. So is our access to a variety of equipment and, often, to courses where the equipment can be turned on all the way.

It is not surprising that the slow-turn plowing characteristic exists in the 250 TR when you consider that the types of bend that evoke it are almost non-existent on European circuits. At Le Mans, for example, there is only the one sharp turn at the end of the Mulsanne straight. There a strong understeer effect probably would not be reflected at all in lap times. But American courses abound in slow, tight turns. In this case, where the European factory has had no incentive to culture slow-turn understeer from its cars, the American driver must do so if he wants to get the ultimate from his machine. And perhaps a valid question here is, how many drivers genuinely do seek the ultimate in cornering?

(Continued on page 62)



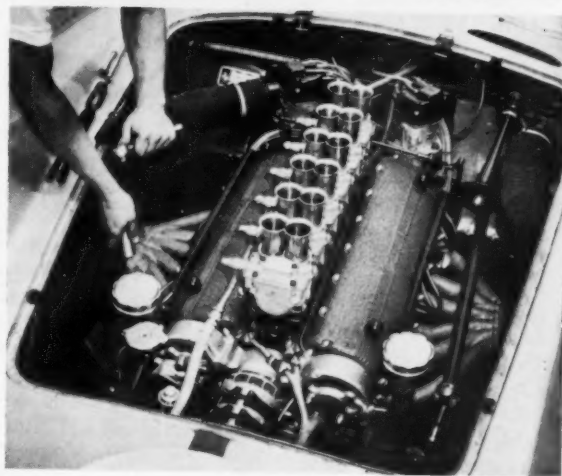
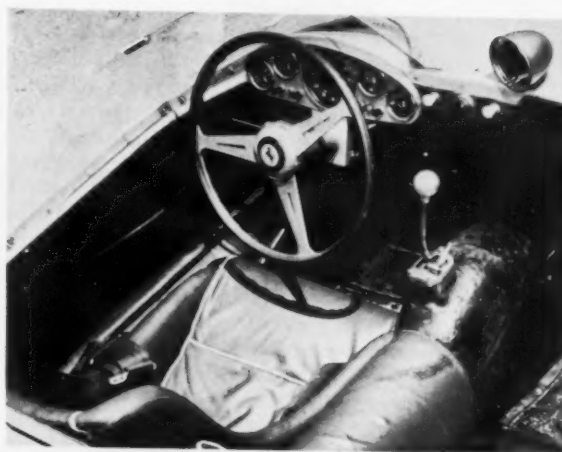
Richie Ginther points to upper radius rod with left hand while holding one end of the lower A-bracket in right. Between the two, they control both fore and aft and lateral movement of rear axle, important for sure-footed cornering.



Light-weight center section is dwarfed by giant brake drums. Center of A-bracket pivots from it below pinion shaft, while outer ends hinge from frame. Brackets at end of axle tube hold radius rod (top) and coil spring (bottom).

Though interior is hardly plush, every reasonable effort has been made to make driver comfortable. Same cannot be said for passenger.

Six twin-choke Webers thoroughly fill the 60° Vee, forcing ignition to go outboard to exhaust side of heads. Below heads, it's all stock 250 GT.



Owner, author and driver; They have good reason to be smiling!



SCI

ROAD TEST:

CITROËN

IN THESE DAYS of the big promise and the small fulfillment, it's refreshing to road test an automobile and discover that its advertising copy understated the case. The "Cit" that we tested impressed us this way: it was comfortable, used little fuel, went fast, and was perfectly balanced between adequate power and superb road handling.

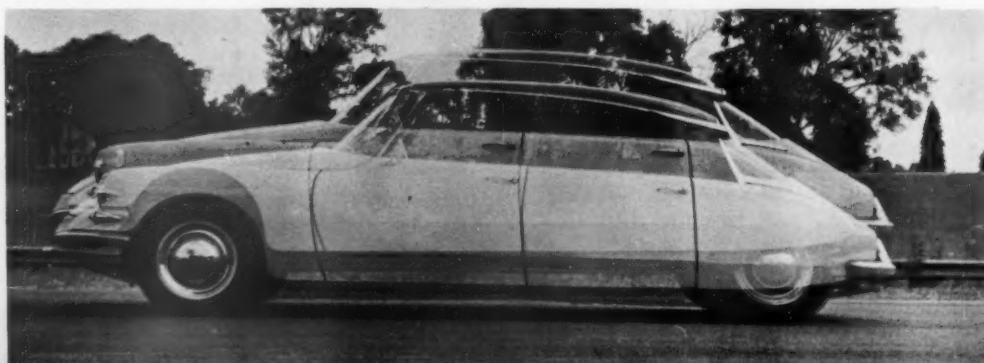
Driving the two hundred-odd miles from Old Greenwich to Lime Rock and return, we found the ID19 to be an extremely tractable and very likeable machine. First, the interior is absolutely plush: you don't sit on the seats, you sink into them. Because of the absence of drive tunnel, there is just as much room in the front as there is in the back, and front seats are fully adjustable. Unquestionably passengers and driver could ride seemingly forever without fatigue, as the two hour trip to LR, six hours on the track and two hour return trip left us as fresh as when we started, as far as driving was concerned.

There is one thing about the steering, however, that we didn't like. Since the car is front-wheel driven, when accelerating under turning lock the torque tends to straighten out the universal joints, requiring restraining force on the wheel. This, coupled with the low recommended tire pressures, makes for hard steering at anything over light turning angles and/or low torque. This is true of all FWD machines, but it really became a problem at Lime Rock. We have to admit that the ID19 is a lot happier on the road than on the race course.

On the road at really high speeds, screwing the accelerator to the floor and judiciously tapping the brake pedal with the *left* toe to slow for curves proved to us that on twisty roads we could walk away from much more powerful stockers. And we took them all as they came. On the track, however, the "Cit" suffered from the same malady that affects most road cars—not enough power to sustain fast sharp turns. Diving into an apex, the sideward thrust on the tires absorbs more power than the engine is producing, slowing the car down rather than powering it through. Lean is also appreciable but certainly not dangerous, as the car will mush to a stop rather than roll or slide if you get over your head.

The most salient feature of the Citroen is its unique air-oil suspension, which levels the vehicle regardless of weight distribution, takes the place of springs, and is almost unbelievably smooth. Here's how it works.

Double exposure indicates highest and lowest of five riding levels, of which middle three are operational. Highest and lowest shown are for jacking only.



Interior is absolutely plush, with lots of room.

On Lime Rock's hairpin at speed, lean is minor, however, notice wheels folded under body. Air-oil ride is fine on road.



Power is supplied from a hydraulic pump located on the engine; fluid from a large reservoir nearby. Each wheel has its own air-oil cylinder (with shock absorber) that is filled with air and hydraulic fluid. A ride-level selection lever to the left of the driver has five settings, three of which are operational. (The highest and the lowest settings are used only for jacking up the car.)

Once a ride level is selected with the lever, the pump forces more oil into each of the wheel cylinders, compressing the entrapped air. The resultant pressure forces the wheels downward. Since the wheel is against the road and can not go down, the body pivots up, in proportion in elevation to the amount of oil pumped in. The end with the least weight goes up first, but within a short time the other end follows to the same elevation. While underway, the resiliency of the trapped air against the piston absorbs impact, and any unevenness of ride level between wheels is automatically corrected by the pump and a system of relief valves. Unless in deep snow or ruts, the lowest setting is the most comfortable because it gives a higher proportion of resilient air to non-compressible fluid.



This semi-elderly Citroën was lifted to install tail pipe, because of its heat the only part unprotected by the belly pan.

Partially assembled model shows nylon fan, fluid reservoir, gearbox & diff forward of engine. Arrows point to brake discs.



The front end consists of one such air-oil unit per wheel, plus an anti-roll bar. Each half-shaft is fitted with an automatically adjusting disc brake, mounted inboard. Rear suspension is identical, except that conventional drum brakes are fitted, and of course there are no shafts. On our ten-stop-from-sixty mph test, the brakes actually surprised us. Our first stop gave us slightly better than $\frac{3}{4}$ g deceleration, dropping over the remaining nine stops to only slightly less amid the stench of friction pads. We lost about one third the pedal, but efficiency held and recovery was rapid. There is a substantial safety margin built into the brakes, in relation to the ability of the engine to develop velocity and therefore momentum.

The undersquare engine has a displacement of 1911 cc, or 116.6 cubic inches. Equipped with a single Solex carburetor (the DS19 has a Double-Barreled Weber) the ID19 develops 75 hp at 4500 rpm. Despite its small size for such a large sedan, it is adequate for most every road situation when coupled to the excellent gearbox, which has 3-close ratios and starting gear.

According to advertising brochures, first gear (3.55) will

CITROËN ID-19

Price at POE\$2833.
U.S. Importer:Citroën Cars Corp.
390 Park Ave.
New York 22, N.Y.

PERFORMANCE

TOP SPEED:	
Estimated	90 mph
ACCELERATION:	
From zero to	seconds
30 mph	5.0
40 mph	8.5
50 mph	13.0
60 mph	19.0
Standing $\frac{1}{4}$ mile	21.4
Speed at end of quarter	62 mph

SPEED RANGES IN GEARS:

I	0-31
II	10-60
III	16-top
IV	24-top

SPEEDOMETER CORRECTION:

Indicated Speed	Timed Speed
30	28
40	38
50	47½
60	57

FUEL CONSUMPTION:

Hard driving	mpg
Average driving	mpg
(Under 60 mph)	mpg

BRAKING EFFICIENCY:

10 successive emergency stops from 62 mph, just short of locking wheels were made at $\frac{3}{4}$ g or better without a trace of fade.

SPECIFICATIONS

POWER UNIT:

Type	In-line, water-cooled four
Valve Operation	Pushrod ohv, 60° inclined valves, hemispherical diameter
Bore & Stroke	3.07 x 3.94 in (78 x 100 mm)
Stroke/Bore Ratio	1.28/1
Displacement	116.6 cu in (1911 cc)
Compression Ratio	7.5/1
Carburetion by	One Solex "34"
Max. Power	70 bhp (SAE) @ 4500 rpm
Max. Torque	98 lbs-ft @ 2500 rpm

DRIVE TRAIN:

Transmission ratios	test car ratio	overall ratio
I	3.54	(13.79)
II	1.89	(7.35)
III	1.23	(4.78)
IV	0.85	(3.30)
Final drive ratio	3.89	
Axle torque taken by radius arms		

CHASSIS:

Frame	Integral with body, welded sheet steel platform, door sills act as side members, unit
Wheelbase	123 in
Tread, front and rear	59, 51¼ in
Front Suspension	Independent, air-oil springs, wishbone, anti-roll bar
Rear Suspension	Independent, air-oil springs, trailing arms, anti-roll bar
Shock Absorbers	are incorporated into air-oil spring units
Steering type	rack and pinion
Steering wheel turns L to L	3½
Turning diameter, curb to curb	37 ft
Brakes	11.6 in dia discs inboard front, 10 in x 1½ in drums rear.
Brake lining swept area	228 sq in front, 84 sq in rear
Tire size	165 x 400

GENERAL:

Length	189 in
Width	70½ in
Height (normal position)	60 in
Ground Clearance (normal)	6¼ in
Weight, as tested	2980 lbs
Weight distribution, F/R as tested	66/34
Fuel Capacity	17 U.S. gallons

RATING FACTORS:

Specific Power Output	0.60 bhp/cu in
Power to Weight Ratio	42.7 lbs/hp
Piston speed @ 60 mph	1690 ft/min
Braking Area	210 sq in/ton
Speed @ 1000 rpm in top gear	23.3 mph

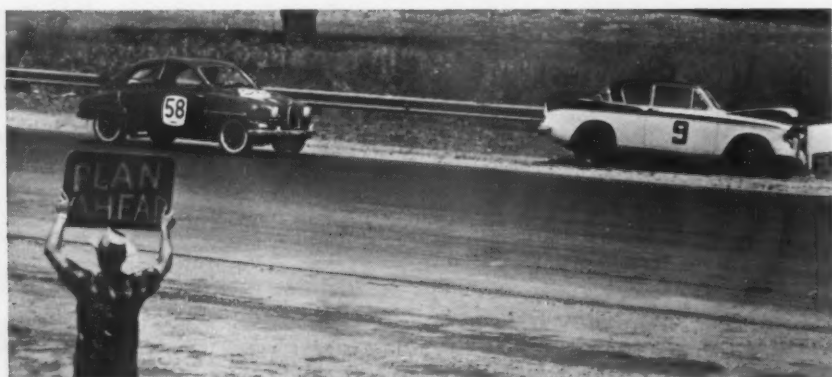
(Continued on page 48)

le petit le mans

by John Christy



Photo by Irv Dolin



ONE OF THE OBJECTIONS people brought up on Detroitware raise to ownership of a small car is that "it isn't safe — it'll just fall apart." Elsewhere in this issue you'll see what it takes in the way of time, money and preparation to keep some of this selfsame Detroit machinery running for one short hour on a road course.

In contradistinction, late this summer 34 small imported sedans were thrashed around a tight but fast road course for a full ten hours. Preparation, other than practice and testing to determine rates of tire wear and fuel use, was by order of the organizers absolutely tabooed. The cars were run "as purchased" with no changes other than removal of mufflers and alternate carb jetting; even the tires had to be original equipment brand, type and grade. Yet when the flag fell at the end of the grueling 10-hour grind only five of the original 34 starters had dropped out. Two of the cars, a Renault Dauphine and a VW had beer rolled in practice yet they started the race and finished as well.

The occasion? The Second Annual Lime Rock "Little LeMans." Originally scheduled to run 12 hours, the half-day stint was throttled by Connecticut blue laws (against racing after dark in any but floodlit stadia). The same law made it necessary to run the race on Saturday since it also forbade public spectacles from beginning before two in the afternoon of a Connecticut sabbath.

The first of these, held a year ago October, had seen a Swedish walkaway with Volvos and SAABs holding down the first half dozen places overall and SAAB firmly cinching the Index rating as well. This year it was a repeat performance although not by quite such an overwhelming margin, an Auto Union (DKW) 1000 having nipped into fifth spot between a pair of SAABs that finished fourth and sixth respectively.

The winning Volvo was a true repeater. It was the actual car which had won the year before, the only new item being a four-speed gearbox, and it was driven by the same crew, Owner Art Riley and co-driver Bill Rutan. The only other actual change was in driver order. Last year Riley had come in for the checker; this year Rutan finished up the stint. Interestingly enough, according to Art the Volvo's lap speeds of around one minute, 25 seconds for the altered course were almost identical to those of last year, the new four-speed box being of value mainly in weaving through traffic. As an aside, that "altered course" comment should be explained. The usual route around Lime Rock includes a fast, sweeping 180-degree turn at the end of the straight but for the little LeMans race this is rerouted to form a hard 90-degree right hand corner with the other 90 degrees of the bend remaining as a fast, tricky sweep. The effect is to add upwards of five seconds to a normal lap which with a Volvo is in the neighborhood of 1:19 or slightly more. At any rate, Riley and Rutan completed 399 laps at an average of 59.97 mph, finishing three laps ahead of the second running Volvo driven by Paul Sagan and Bob Fisher.

(Continued on page 46)

spvw

The saga of the Beetlewagen



Illustrations by Bob Weber

By Van Lesley

I AM WITHOUT WIFE, home, or profession: I have only one pleasure in life—I am an enthusiast. My only goal in life is to drive, drive and drive my TC. Nothing else gives me any pleasure; nothing else gives me any satisfaction. All I want to do is drive. Sometimes, though, I do have my Pilates to face who repeatedly wash their hands of my TC.

The most irritating thing, as any owner of The True Automobile knows, occurs at stoplights when the Smart Aleck Detroit Owner leans over, sneers at you, races his motor two or three times, and then says, "Think you got a hot one there, huh?"

There is not much you can do. These Detroit Dishpans are very fast on stoplight jumps, especially when you are driving a car like a TC. I have made many an unsignaled right turn just to save myself the embarrassment of watching some six-liter bus roar out ahead of me.

Even more irritating is when one particular member of the Mislead Mob (who

drives an automobile that shall go unnamed, because I do not want to get into trouble with a concern as large and powerful as Ford) pulls along side of me on the freeway in his hack that looks like a Ford that spent the night in a Jivaro camp, shakes his head pityingly, and roars away. Even the old adage about winding roads isn't of much use against these Misconceptions of Motoring.

One incident stands out in my memory lucidly. I was tooling down the way in my old TC, when a shiny new Boom Buzzard pulled up next to me so close that the fishy fins almost scratched my wax. Sitting behind the wheel was a young man with sideburns and an evil look in his eye. If I had been wise, I would have executed standard operating procedure and turned right; but I didn't. We soon came to a stop sign, cheek to cheek, so to speak, and then Sideburns made his move. He leaned over and called me, "Hey, Gran'pa, I've got a cool five that says that washing machine

can't keep up with me even on a winding road."

Then and there I should have told him to go hatch a bird, but I didn't. "Son, you've got a bet," I sneered back. "Turn left at the next corner. We'll start out neck and neck, and I'll wait for you at the end of the road."

Sideburns just laughed, revved his engine, and we were off.

That night I went home to my beans and borscht with an empty feeling in my wallet. I decided then and there that the time for positive action had arrived. The first idea that passed my mind was to put another mortgage on the house to buy an XK SS or a 300SL. I decided against this, though. Too many Mislead Minions of American Motoring know the potential of these two great automobiles, and they would be wary. Besides, these cars just look too vicious for what I had in mind.

Suddenly, in the middle of my seventh whiskey and soda, the Great Inspiration struck me with all the force of a 4.9 Ferrari full out. That night I slept the sleep of one who had seen the walls of his Jericho crumble.

The next morning the world was once again a lovely place in which to drive. I felt somewhat like David. My Goliath was dead, at least theoretically. I set about that morning to remove all bugs from the Great Inspiration. After almost a week of hard work with slide rule and pencil I had the information I needed. Now all I needed was a Volkswagen. It took me about a week to find a suitable VW, and then it took another two months to transform it into the Great Inspiration.

Finally the day came. The VW was sitting in front of my house, and I was loaded for bear. It was now open season on Boom Buzzards and Detroit Dishpans, and there was no bag limit.

By the time I had devoured my morning toast, quite a crowd of the curious had accumulated around the VW. I suppose





they were attracted by the large aluminum key which stuck out from the trunk.

I decided that they had stared enough—anyway, I was eager to put the VW out on the highway to try it. I walked out to the car, and was almost knocked off my feet by the questions that hit me. My neighbor, who drives a Finbucket 8, grabbed me by the arm and started in.

"Just what," he asked, "are you doing with that toy?"

I decided to play coy. "What toy are you talking about?"

"I happen to be talking about this ridiculous Volkswagen. Just what are you trying to prove?"

Ah, if only he knew what I was trying to prove. "Tell me," I asked him, "haven't you ever seen a spring-driven Volkswagen before?"

Babbling noises, and rather strangled exclamations were hot on the breeze. Now was the time to throw the Sunday punch. I calmly walked over to the VW, turned the big key in a clockwise direction for several turns, got in the car, and slowly drove away. I noticed my nosy neighbor sitting on the curb with his head in his hands. Already the taste of victory was sweet in my mouth.

I pulled out onto the highway and drove to the first stoplight to make my play. A new Chromobile was behind me, and I wanted to test the VW out. I jumped out of the car, ran around back, wound the key again, then went back to the wheel. I looked through the rear view mirror to see the Chromobile driver just about laughing himself out of his car. So far so good. As

the light changed, I floored the VW and jumped across the intersection like a moose chasing a moosess. The fellow in the Chromobile stopped laughing—in fact, he ran off the street.

At the next stop sign he pulled up beside me, started to say something just as the light changed, and was left with a mouth full of dust. He finally caught me long enough to ask what I had anticipated he would ask after he caught me.

"Hey buddy, what you got under that thing?"

Now was the time, and with a great effort to conceal my enthusiasm, I shouted back at him "Big Spring." Then I shot away. I could see him pull over and stagger out of his car.

Actually I did have a big spring in the VW, but it was not the power plant. The VW was constructed like this: out of the rear deck a large key protruded. This key led to the former engine compartment, which now housed a variety of small gears and one big steel spring, somewhat like a clock. The key would wind in a clockwise direction, tightening the spring, or so it would seem to any observer. In all truth, the key and the spring mechanisms were dummys. The actual power plant was located under the back seat. It was a specially-developed steam engine. It was noiseless, powerful, and efficient. The whole unit was artfully concealed under the asbestos lined back seat, and by making use of the space provided by such things as hollow doors, there was no sign of the engine or accessories from either inside or outside the car. The drive shaft was hooked to the rear axle so as to appear that it went up to the spring. I also had a mechanism geared to the key from the rear wheels so that when they were revolving the key also revolved in a counter-clockwise direction, and a steady clicking noise came out. The only noise from the engine was a small "whoosh", but this was not noticeable. When the VW went down the road the only sound anyone ever heard was a steady "click click click," as if the spring were unwinding. This was my Boom Buzzard Killer, and I was eager to prove its worth.

There was one character in particular that I wanted to meet, and that was Sideburns. One afternoon I was driving down the same freeway in the Killer, as I had nicknamed my VW, when I saw the Boom Buzzard. It was resplendent with fishy fins, and was sitting in a filling station. I pulled in on the pretense of buying a pack of cigarettes, and started my move. Sideburns looked over at the VW, saw the key stick-

ing out, and started to laugh. He walked over to me and said, "Hey, Gran'pa, what did you do, trade in your alarm clock?"

I looked at him, gave a curl to my lips, and said, "No, I didn't. But you really ought to get rid of that silly bus you're driving and get something that will go."

"Take it easy, Gran'pa," Sideburns said. "I'd hate to have to show you what's what again!"

"I've got a ten dollar bill that says that Chrome Plated Can of yours can't keep up with me on a straight road."

Sideburns' mouth fell open; then he started to laugh. "It's a bet. Just one thing, what kind of a motor have you got in that German Garbage Scow?"

Now was the time. "There's no motor in it."

By now Sideburns was laughing so hard that he was choking. "Come on, Gran'pa, I'm not going to back out. What kind of a motor have you got in that!"

I gave him a look of pure indignation, and said once again, "There's no motor in this car. There's nothing but a spring."

Tears were falling from Sideburns to pavement now. "If you won't tell me, then I'll look."

"Go right ahead," I told him. "Oh, by the way, I've got another five that says you can't find anything in that car but a spring."

Sideburns stopped laughing and looked at me with apprehension in his eyes. "O.K., you're on."

He started toward the car, but I said to him, "Say, I'd like it better if you wait till after I show you who's got what around this place before you look at the spring." This was planned. I thought it would build up a doubt in his mind, and it did.

"Whatever you say, Gran'pa," said Sideburns. "Come on, let's go out to the airport so I can get that ten dollars from you."

I noticed him looking at the Killer rather strangely when we pulled away from the filling station. He seemed to be amazed when he heard the clickety-click and saw the key turning.

At the airport was an unused runway that hot-rod enthusiasts had taken over and made into a drag strip. We pulled up side by side and Sideburns shouted over at me, "You ready, Gran'pa?"

"Not yet." I stopped the Killer, got out, went to the key and started to wind. Sideburns walked over, and stared with open mouthed fascination. Finally I stopped. "Well, I think it's tight enough to take you now. Let's go."





We started out side by side. Sideburns kicked the Boom Buzzard, and I let the Killer go just enough to keep two or three feet ahead of him. We went a half mile, then stopped. Sideburns got out and came over to me. "Please, Gran'pa, what have you got in that thing?"

"Nothing but a big spring. Let's go back now. I think you got off to a bad start." Sideburns nodded his head, and we turned our cars around, ready for the run back. Now was the time for the kill, now *Might* was with *Right*.

We got off to a good start, and by the end of the half mile I was at least twenty car lengths ahead of Sideburns. He came screeching to a stop beside me, and I casually remarked, "Good thing I forgot to tighten the spring, isn't it?"

He made straight for the car, just as I had expected. I don't think he could have said anything even if he had wanted to. I noticed a glassy look in his eye.

Sideburns pulled out the key, opened the trunk and almost fell in. He stood for a full minute with his mouth hanging open, then he muttered, "My God. There's nothing there but a big spring." Suddenly he

realized, or at least he thought he did. "The motor's in the front!"

"Look for yourself," I told him.

He lifted the front cover and again nearly fell in. "My God, there's nothing there." Then he fell to the ground and rolled under the car. He soon came out, muttering, "Big spring, click click click, big spring."

Sideburns was visibly all shook up. He staggered over to me: "Where did you get this? Where? Please, sir, where?"

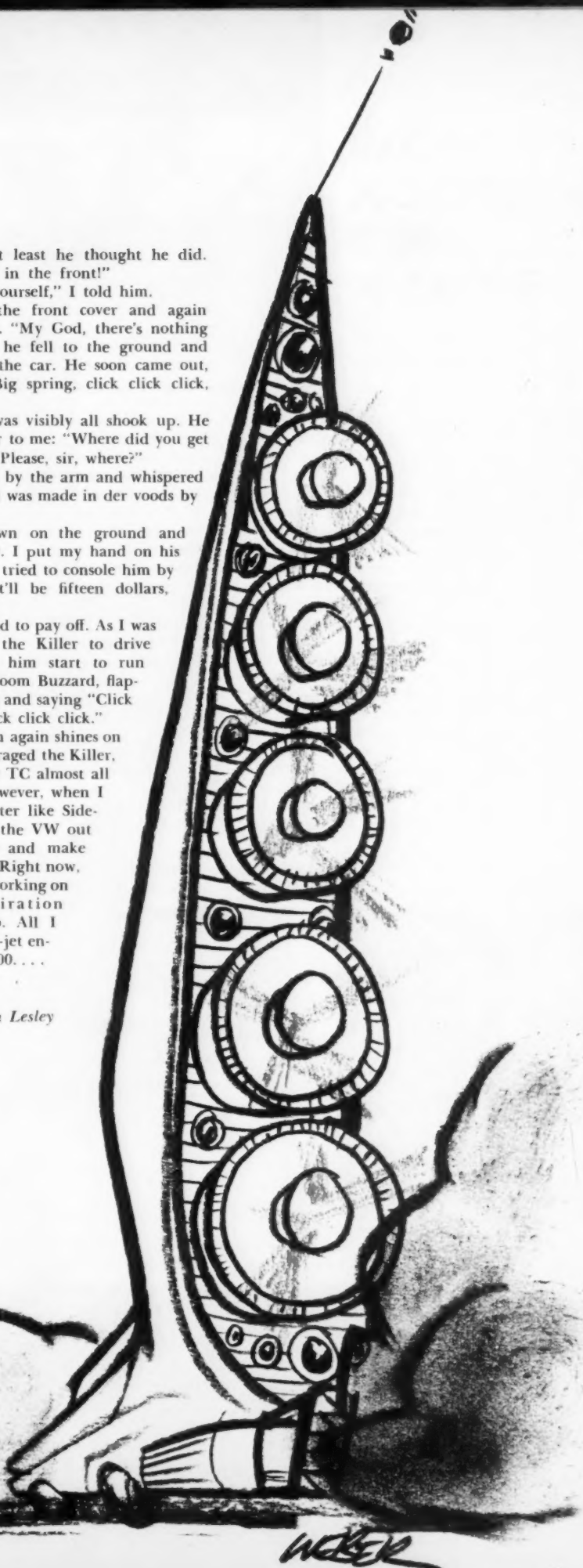
I took him by the arm and whispered in his ear, "It was made in der voods by elves."

He sat down on the ground and started to cry. I put my hand on his shoulder and tried to console him by saying, "That'll be fifteen dollars, please."

He managed to pay off. As I was getting into the Killer to drive away, I saw him start to run around the Boom Buzzard, flapping his arms and saying "Click click click click click click."

Yes, the sun again shines on me. I have garaged the Killer, and drive my TC almost all the time. However, when I find a character like Sideburns I pull the VW out of mothballs and make mental cases. Right now, though, I'm working on Great Inspiration number Two. All I need is a ram-jet engine, a Fiat 600. . . .

Van Lesley



HOW STOCK IS STOCK?

By Len Griffing



Jack Smith qualified '57 Chev at 2:05.42, led all the way.



Truckload of CO₂ stood by; Marty Anderson wore asbestos throughout.

THE MEN who drive and the men who pit for the NASCAR machines lend themselves to be underrated. They speak only English and dress in the clothes of the working American; and their cars are or look like they once must have been the same kind of machine your Chevrolet dealer wants to sell you. It's only when you crawl underneath or throw a stop watch on a lap or two that you realize that these race teams are composed of smooth professionals to whom racing is a business.

This first time in the East that NASCAR sanctioned a "Production" American Sedan road race was of interest to us because of where the race was run — Bridgehampton. This track is a fast circuit that before the completion of its second year has wrecked a 120 Jaguar, a 2-liter Ferrari, a Lotus Le Mans and a Porsche Speedster. The question was — how would these left-turning road monsters do on a *real* road course?

Big tires, big shocks and drilled-out backing plates for those right turns, too. Cotton Owens nearly closed his '58 Pontiac a few times, but was second all the way.

After an electrical timer had been set up, the cars and drivers checked in for time trials. Cotton Owens' '58 Pontiac clocked 2:08.35, and was in turn bettered by the '57 Chevrolet piloted by Jack Smith, 2:05.42. Not bad, considering the Lister-Jags turn this course about 1:58. More about times later.

The 35-lap hundred-plus mile race was uneventful, as races go, except for the last lap. A blown tire on Axel Anderson's '57 Chevrolet caused him to flip, but Axel was uninjured and the car honestly didn't look any different after the accident than it did before. From the moment the flag fell, Jack Smith led the field — once by as much as a mile; but took the checker only 12 seconds ahead of Cotton Owens' '58 Pontiac, which had held second place for the entire race and made concerted efforts to catch up. He came close, but never quite close enough. Incidentally, the winner drove the entire race in high gear, and went home with

\$800 of the \$4200 purse. Elapsed time: 1 hr. 14 min. 16 sec.

The "stock" sedans were, of course, stock as to give your Chevy dealer an ulcer if you should order one. Under the hood there was a single carb; however, the right side of the front suspension was built up by meaty beams to accommodate an additional heavy-duty shock for turns, normally only left but today mostly right. On the underside, heavy-duty diagonally-installed shocks and drilled-out and scooped brake backing plates attract the eye. Rear ends, in addition to big shocks, also have very sanitary and apparently very effective Watts' linkages. All very stock!

Asking Buck Baker, after the race — "Buck, what do you do down the straight?" "130, 135."

"What kind of revs do you turn?"

"We go up to 7000."

"7,000! How about valve crash and how can you hold it together?"

"Well, first the valves springs are very stiff. Secondly, the rockers are lightweight and carefully assembled. And don't forget, it helps a lot to remove most of the friction, as between the piston and the wall..."

"Buck, what happened to you toward the end of the race? You seemed to slow down."

"I did. I'm working with a set of experimental tires, and on my first few practice laps they bit well — I cut 2:02 — then they got hot and got slippery. It felt like someone had oiled the road!"

"Interested in sports cars, Buck?"

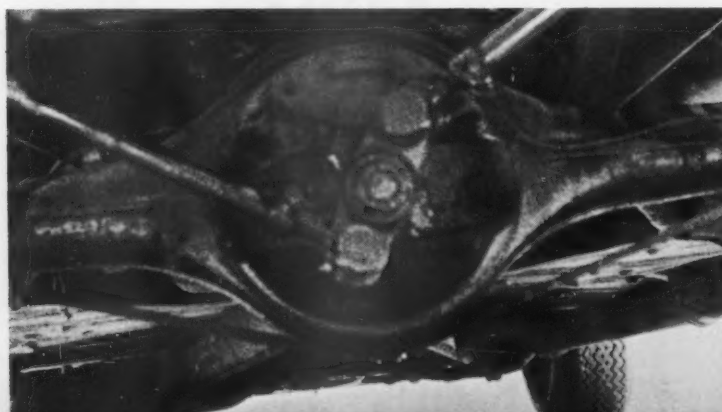
"I'm just aching to get my hands on one of those Listers!"

All in all, a day at the races did prove several things. Big American engines that once were stock will hold together at 7000; and similar sedans, properly set up and properly driven, will cut quick ones either right or left. But, of course, the question is how "stock" is "stock"?

Len Griffing



The working half of these beat-up looking stockers was very sanitary, with very heavy-duty shocks and Watt's linkages for location.





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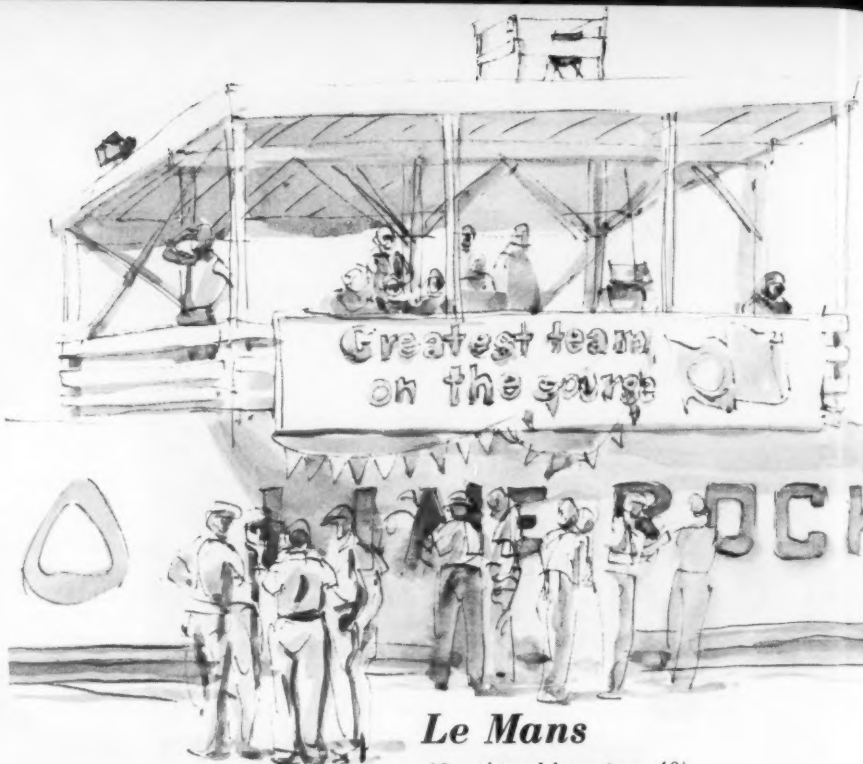
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ART CENTER SCHOOL

Le Mans

(Continued from page 40)

Third spot was taken by Charlie Kolb and Dick Wilhelm in another Volvo. This one was sort of a fluke, too. Kolb and Wilhelm had arrived with a prepared car — too well prepared, in fact. The technical committee spotted a set of Air Lifts in the front springs and requested that they be removed. There was no objection to the ruling and the crew pulled them out forthwith and then sallied forth for practice. Shortly later they experienced internal ills and hauled the car into the pits. The damage was not repairable and the car was scratched — but not the entry. Quickly they installed belts and fire extinguisher in one of the private cars they had brought with them and came back through tech inspection with a big number 6 in tape on the side. Needless to say, they passed. And they ran — in fact they held down first spot for the first hour. This with a car that had no more preparation or tuning than a bit of tape and the poke of a starter button.

It could be expected that the Volvos would show up well — everybody knows they're quick cars. SAABs are also quick but not all that much. What then with the smaller Swedes?

Not being allowed to do more than use the larger venturi-and-jet power setting, the SAAB crew set out to prepare themselves, which they did with a thoroughness that would do credit to the Mercedes organization as run under the incomparable Neubauer. A week before the event they rented the course for a full day and appeared on the scene with mechanics, alternate drivers, mechanics and a radio technician as well as gas and a truckload of tires. First the cars were checked out with several drivers to pick the fastest three. These then had Vocaline short wave two way radio sets installed. Then they settled down to an all-day grind, keeping accurate records of fuel consumption and tire wear. They held simulated and actual pit stops for fueling and tire changes. They checked radio reception. They kept lap

charts and lap time records. By the time the day was done they knew to the minute when a tire would be ready for a change and to the second when fuel stops should be made. The drivers and pit crews were sharp and ready. When race day came the entire team from scorers to drivers was set to go and go they did. Only faster cars and accidents could upset the teapot. Well, the Volvos were faster and an accident occurred. The leading SAAB driven by Emil "Pup" Pupildy running in fourth overall was suddenly confronted by a spinning DKW which had just suffered from a broken axle. The resulting shunt put the "Pup" car into the pits for half an hour to repair the damage, spoiling a 1-2-3 Index record for the team. (Index ratings were established not only by engine size but by a formula that took into account interior dimensions as well, worked out by SCI's Steve Wilder.) As it was they took first and second in class and in Index.

Our Stephen, by the way, had somewhat of a shunt himself. Dicing in a DKW with a privately entered SAAB driven by Bob Bucher, Steve charged down the hill toward the straight cheek by jowl with Bucher. Bob got the inside and Steve's right foot got a shade heavy. The SAAB's tail edged out and the light tap was enough to send the DKW roaring toward the guard rail where it left pieces of good



Deutscher body metal stuck in the railing but continued on only to become the casualty, this time with Jim Haynes at the wheel, that put "Pup" out of contention.

Other interesting incidents were bound to occur and did. The single Sunbeam Rapier had been running like the proverbial train for an hour, staying up among the Swedish contingent, a very pesky Anglo-Saxon threat when to all intents and purposes its day was suddenly done. Coming down the straight it tossed a left front hub and wheel and slid to a halt in front of its own pit. Rules allowed towing a disabled vehicle to the nearest safe spot without disqualification. The nearest safe spot happened to be the Sunbeam pit and the driver set about seeing what he could do to repair the damage. Somehow, in these circumstances, there always seems to be an obliging spectator — this was no exception. The spectator showed up at the pit with a new Rapier and offered to loan the necessary front end parts off his own car. The stalled driver immediately set out to field strip his car and that of the obliging bystander. Careful not to allow too much air to get in the brake lines he changed hub, spindle, brake drum and backing plate, then, two hours and some minutes after the incident he made a slow lap in order to satisfy the requirements for a regular pit stop where the mechanics could work on the car and finish off the repair job. Remember, this was a simulated road breakdown and only the driver was allowed to make repairs until he could continue on to make a legal pit stop. If there had been a prize for the hardest work under the toughest conditions in order to finish the race, Sunbeam would have got it hands down.

In another case somebody got in a hurry and one Volvo was down almost an hour because of it. As anyone who has been east of the Poconos is aware, Amoco gas is all gasoline and crystal clear. So's water all water and crystal clear. Only trouble is, the former is a fine engine fuel and the latter isn't. Well, somebody goofed. The car shot out of the pits and minutes later coasted around and back in. Water in the carbs, water in the tank — all water. They got it all out finally but the car didn't run quite the same from then on.

As CBS's Art Peck who announced both the 10 hour events put it, this race can be one of the most significant automotive events in the country. Whatever it is, Lime Rock's Little LeMans is one hell of a race — and a four-alarm ball to boot.

—John Christy



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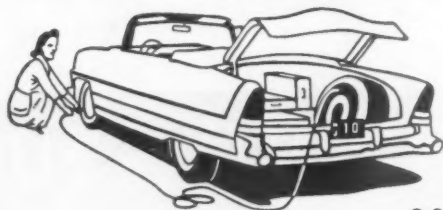
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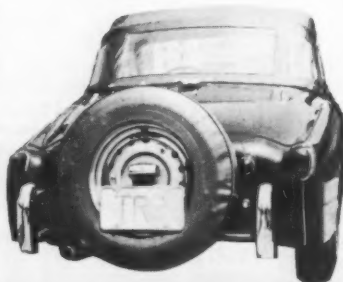
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ID19

(Continued from page 39)



do 25 mph; we shifted at 32 mph: second gear (1.9) 50 mph; we did 62: third gear (1.22) supposedly does 72; we stopped acceleration at 75 mph solely because we ran out of straight at Lime Rock. Fourth gear is overdrive (.85), and though we didn't clock it, you'll get an honest 90 or 95 mph.

In the fuel consumption department, "Mileage: up to 35 mpg"; we filled up with Amoco in Old Greenwich, drove to Lime Rock at high speed, made acceleration runs, drove around the track under competition conditions for at least a solid hour, and drove home at *very* high speed. Overall average fuel consumption under most adverse conditions: 22 mpg, and when we say adverse, we mean you couldn't get any worse if you owned an oil company. Thirty-five mpg does not seem to be an exaggeration.

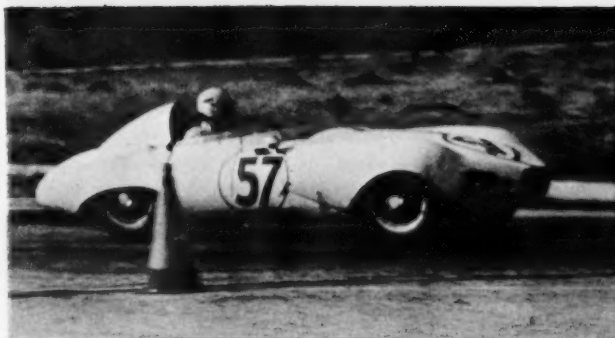
But after something like eight hours in the ID19, when we stepped out the right leg was somewhat cramped. The long accelerator arm comes out from the firewall and, other than the heel on the floor, there is absolutely no support for the foot that actuates it. At full throttle this is not uncomfortable; but at sustained part throttle it gets really tiresome. Also, there is no oil pressure gauge or warning light, and no temperature gauge. When we returned the car, we asked Jacques Manicucci, Citroën service executive, where they were:

"The factory engineers will laugh at you if you mention this. The car will pump oil as long as you have only a single pint in the pan, and the first high speed turn you make you lose pressure anyway. An intelligent driver knows enough to keep the oil level up; the other kind wouldn't watch the instruments anyway. And the same thing goes for the water."

This, accompanied by a shrug, was a remarkable combination of French logic and French cynicism. Small controls of our car were labeled in French, but more recent imports have English tags. They're all there, but it was with considerable surprise we realized that this plush machine had non-cancelling wipers and non-cancelling signal lights.

The trunk, though, is positively massive. So—aside from obvious improvements needed on the wipers, and some kind of dead pedal located near the accelerator, the ID19 Citroën is a luxurious four-door sedan with road handling to satisfy all but the most sporting of blood. It's no car to put on a tight race course, but for hour-after-hour of high speed motoring, it's on a par with the best. And the bumpier, ruttier and outright miserable the roads are, the prouder you'll be of your "Cit." You can't find a bad road when you own one.

Len Griffing



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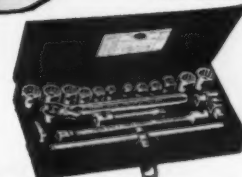


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Maserati Test*(Continued from page 21)*

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ESTIMATED PERFORMANCE (See Text)**TOP SPEED:**

130 mph

ACCELERATION:

From zero to	seconds
30 mph	3.0
40 mph	4.7
50 mph	6.1
60 mph	7.9
70 mph	10.9
80 mph	13.4
90 mph	16.4
100 mph	21.3
Standing ¼ mile	16.8
Speed at end of quarter	91 mph

SPEED RANGES IN GEARS: (1000-5500 rpm)

I	0-39
II	12-65
III	18-99
IV	23-top

FUEL CONSUMPTION:

15 mpg

SPECIFICATIONS**POWER UNIT:**

Type	Six cylinder, in-line, water-cooled
Valve Operation	Chain-driven dohc, 75° V-inclined valves
Bore & Stroke	3.38 x 3.94 in. (86 x 100 mm)
Stroke/Bore Ratio	1.16/1
Displacement	273 cu. in. (3485 cc)
Compression Ratio	8.2/1
Carburetion by	Three Weber 42 DCOE3 twin-choke side draft
Ignition by	Two coils, Marelli ST III dual point distributor, 12V battery plugs
Max. Power	240 bhp @ 5500 rpm
Idle Speed	1000 rpm

DRIVE TRAIN:

Clutch	Single-plate dry disc, hydraulically operated.
Transmission Ratios	Factory Figures Our Estimates
I	2.28 (3.3)
II	1.68 (2.0)
III	1.27 (1.3)
IV	1.00 (1.0)
Final drive ratio	3.54, optional: 3.31, 3.77, 4.09, 4.27, 4.55, 4.78

Axle torque taken by radius rods and third shock absorber

CHASSIS:

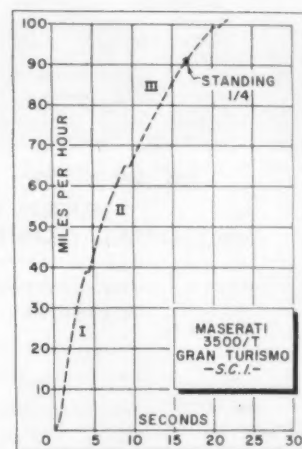
Frame	Tubular steel
Wheelbase	102 in.
Tread, front and rear	54½, 53½ in.
Front Suspension	Coil springs and wishbones, anti-roll bar
Rear Suspension	Rigid rear axle, semi-elliptic springs
Shock absorbers	Girling telescopic F 4.5 front, F 7.5 rear
Steering wheel turns L to L.	4½
Turning diameter, curb to curb	
Brakes	12 inch dia. x 3 inch wide finned drums
Tire size	Pirelli 6.50x16 or Firestone 600x16

GENERAL:

Length	180 in.
Width	67 in.
Height	52 in.
Fuel capacity	19 U.S. Gallons

RATING FACTORS:

Specific Power Output	1.18 bhp/cu. in.
Piston speed @ 60 mph	1675 ft./min.
Speed @ 1000 rpm in top gear	23.5 mph



Enough of the problem of road testing, what's the car like? When a dog bites a man, that's news, and so is it news when a builder of racing cars turns his hand to "high performance luxury cars." We describe it thus advisedly, for this is no thinly disguised race car. It's really meant to be driven on public roads at any and all times in all sorts of traffic. Luxurious it certainly is, and expensive too, though no more so than its few competitors.

One of the things that makes this car expensive is its body, for each one is individually constructed. So far the 3.5 has been bodied by both Allemano and Touring. To distinguish between them the former is designated 3500/A while our test car, to give it its full name, is the Maserati Gran Turismo di Lusso 3500/T.

Carrozzeria Touring are pioneers in Superleggera (extra light) construction. Much copied nowadays but the originators are probably its most productive exponents. To the frame of the completed chassis are welded a series of small diameter tubes. These are shaped to match the contours of the body. Some are straightforward cross or longitudinal sections, others are such particular lines as fender troughs, headlight or hood openings, fender edges, etc. When these have all been fitted the skeletal outline of the completed body shape is quite evident. To them and to each other are fastened the individual body panels. Already shaped approximately, they are then finished off to match the final contour.

Since the whole structure is welded together, it is sometimes called monocoque construction. This is a bit of a misnomer as the in-this-case tubular frame contributes by far the most to the total rigidity. It's the nearest thing to unit construction in the special-body field as great sturdiness is achieved with a very light structure. There are no rattles and no unsightly seams to spoil the lines.

The Italians have earned a reputation for outstanding body design since World War II. Often ahead of Detroit's "way out" boys, they have been copied more than once. But we viewed the Maserati with

(Continued on page 58)

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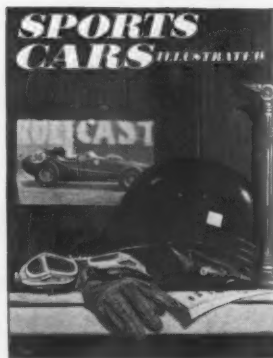
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More reasons why the December issue of SCI takes the checker:

BIG NAMES: Top-notch writers like Ken Purdy, Griff Borgeson, Merwin Dembling, Karl Ludvigsen, and Smith Hempston Oliver, past curator of the Smithsonian Institute (with a story on the 52 year old 120 hp Locomobile!).

MORE PAGES: Thirty more than usual!

THESE PLUSES: Technical articles on the new DAF from Holland—the economy car with an automatic transmission—and on the famous Stutz Blackhawk. How to set up a pit at a race. A big report on the road racing tire just developed in the U.S.

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German GP

(Continued from page 23)

car, fitted with coil springs all around, in place of the usual transverse leaf spring at the back, and before the race, its Dino 246 engine was taken out and put into Mike's Dino for the GP. Dutch Koni shock absorbers were fitted to all of the Ferraris for the second practice session and on the Formula II car of Phil Hill they made over a 12-second difference in lap time, the handling of the car was so improved.

Once again, it was a brake story with Ferrari. Phil ran out of brakes about half way through the race while he was leading the Formula II machinery; this coupled with a nasty spin he had after hitting a patch of oil on the circuit, forced him to lose ground to McClaren's Cooper and the single seater Porsche of Barth.

BRM were also having troubles. Handling was never right in practice, and both Behra and Schell were going around with long faces, Behra wishing he could have the FII Porsche instead of the BRM FI. The BRM problem was the same as Vanwall had had the previous year, wrong shock absorbers and improper springs. They never did get things sorted out and Behra completed only a few laps, finally retiring as he felt the car was unsafe and he was not willing to risk his neck for nothing.

It was not a Lotus day either, for the new FI car driven by Graham Hill cracked its radiator during the race, as an indirect result of a practice spin. A few changes have been made in Colin Chapman's new car since its initial appearance at Reims, among which is the fitting of a completely recirculating oil system for the rear mounted gear box. Driver over-heating has been attended to by the liberal use of asbestos.

Jesse L. Alexander

A-H 100-6

(Continued from page 27)

For the competition minded, this controllable drifting is much enhanced through the use of racing tires with stiff sidewalls and flat tread sections. The Dunlop Roadspeeds with which the car comes equipped are excellent for touring but they do tend to flex and to wear excessively under hard cornering at racing speeds. For this use Dunlop R-3 and the long-wearing R-4 tires are excellent — this writer has used both with good results, using 37 psi at the front and 40 psi pressure at the rear on tight circuits and lowering these figures by about four psi on fast courses where heat build-up is a major factor. Alternatively Firestone Supersports 170-T or Englebert Competition P can be used. For those who don't plan on hard competition these are all a bit stiff and will hand out a pretty firm ride; the original equipment Roadspeeds will be more comfortable, set at 23 and 25 psi, front to rear.

There is another endearing feature of the new two-seater — the top. The older four-cylinder cars had tops that were little more than rain rags. The four-seat 100-6's have tops that lick the leakage problem but at the expense of a rather complicated interlocking front bow and a series of fingernail-breaking snaps around the back. The problem is that there is no side framework to hold the bow in place while it

is being locked in place. The newer two-seater top has this framing and the hooking of the front bow is simpler as a consequence. An extra cost option on both the two and four seat versions is one of the prettiest and most functional fiberglass hardtops in existence. With this in place the car becomes a coupe in truth since the aluminum-framed side curtains fit the openings exactly and are fitted with rubber trim to effect a weathertight seal. Esthetically speaking the four-seat version is, to our personal taste, the prettier of the two but only for its slightly greater length which gives it a sort of modified fastback look that is almost as much Modena as it is Warwick.

From an inside point of view, things are much the same as before. We have heard complaints in the past that the Healey was built with one size of driver in mind — the steering wheel was too far away or too close; the pedals hard to reach, not enough head room and so on. We have found none of this in the latest version. The seat can be moved forward for a short driver and the wheel is not resting on his belt buckle. Alternatively it can be racked all the way back for a long-legs and the wheel is not out of reach. Headroom might be a bit tight for someone with a fairly long torso but otherwise it's adequate with the soft top and more than ample with the hardtop.

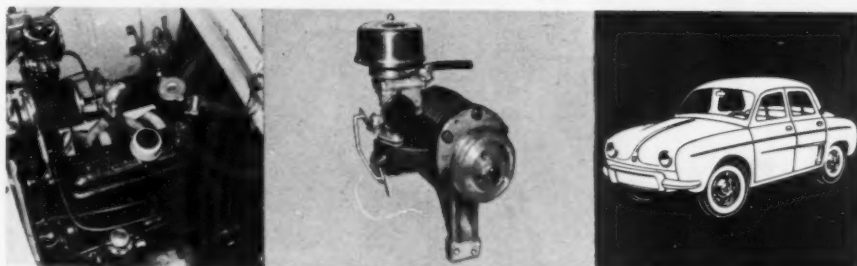
As far as operating the machine goes, the Mess rs Healey have as usual made things very easy. All the small controls are within easy reach and after a few hours can be operated from memory alone without a sideward glance. There are none of those abominable controls so dear to the hearts of some Britishers — i.e., the dash-mounted horn button that is just exactly out of reach, the awkwardly placed dimmer switch and the pull-knob starter actuator. The horn button is where it should be, in the center of the wheel; the dimmer switch is an easy toe-kick from the clutch pedal and the starter is a proper button. The gauges with their black numerals on silvered backgrounds can be read with tachistoscope rapidity, yet are stylishly attractive and set in a panel covered with leather which matches the upholstery motif (red, blue, black or green). The pedals are spaced conveniently enough for those with large shoe-sizes yet not so far apart as to be awkward for rapid footwork and/or heel-and-toe operation.

On looking back over this report one word seems to stand out. That word is "smooth" and it describes the newest Austin Healey accurately. This is a smooth machine, even unto the exhaust note which now emanates from not one but two pipes placed side by side on the left. They hum a pleasant note that rises to that deep almost musical muted "who-o-o-om" associated only with a properly aspirated six cylinder engine in full song. Although it was probably designed into the car with the clink of a cash register in mind as much as anything else, it's still a delight to the ear of the seeker-after-truth. As far as that goes the whole car is as perfect a mating of commerce and purism as one is likely to find anywhere in the world. It's all very satisfactory since the result is the eventual enrichment of the Messers Healey and the stockholders of BMC and pure motoring pleasure for those who own the cars.

—John Christy

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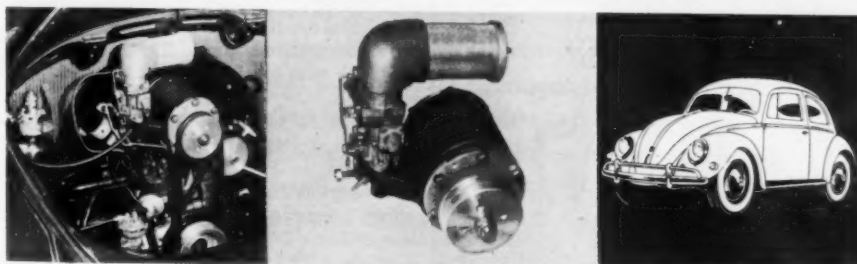
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1st		3	

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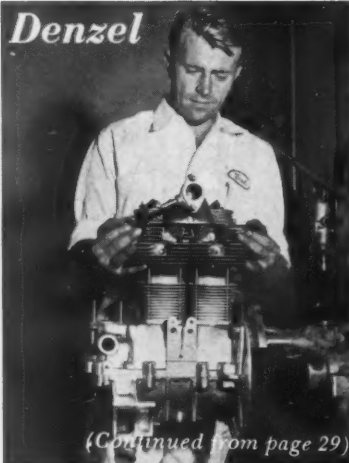
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54

Denzel

(Continued from page 29)

reasonable set of tools. No machine work is required.

Here's how it goes: after removing the engine from the car it is cleaned, completely disassembled, and painted where necessary. The re-assembly process begins with laying the new crank in the case. The Denzel crankshaft is a rugged unit, forged; fully counterweighted and thoroughly polished. Mains are, of course, same as VW; but the rod journals are the same diameter as the Porsche 1500. Rods are heavier than VW, too, and have a Porsche look about them. The crank assembly — including rods, pistons and pins — is balanced at the factory and arrives plainly marked for mating.

Pistons are light alloy with three rings — two compression above the pin and one oil ring near the bottom of the cutaway skirt. Regular Volks slugs are fully skirted and have all the rings at the top. Denzel's cylinders appear to be from the same family of alloys as Porsche, and are similarly chromed and knurled. Close inspection shows precision throughout the kit, including cylinder fins that are quite smooth and uniform. The barrels fit the VW case's stud pattern, but special inserts are provided for the heads, and are drilled to allow clearance for the studs. The heads, in addition to being larger than VW, have a combustion chamber with practically no dome and, with the new pistons, provide an 8.2 to 1 compression ratio. Sparkplugs enter from a steeper angle than they did with stock heads. Plugs are 18mm, 3/4 inch reach, Bosch 225-T2 specified.

Comparison of valve diameters is revealing:

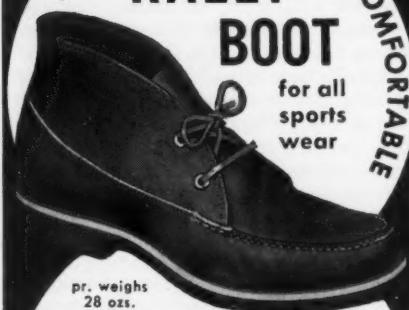
	VW	DENZEL
Intake	30mm	30mm
Exhaust	28mm	32mm

The Denzel 1300 then, compares with the Porsche 1500, which has 38mm intakes and 31mm exhaust. Spring pressures are also closely similar, and no valve float has been encountered up to 5,200 rpm using the stock VW cam. The new tubular pushrods are light alloy with hard-chromed steel cam followers pressed on ball and socket joints.

Following regular VW routine, the rocker arm assembly, shaft, rockers, springs and valves, are installed in the heads before dropping them on the two banks. With crank and cam in place, and both halves of the engine put together, the remainder of the assembly becomes a bolting-on process. Intake manifolds, husky and clean, are matched to the generous

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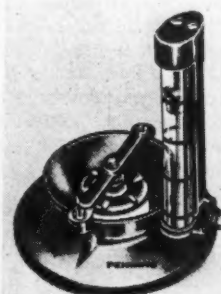
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ports of the Denzel heads and the Solex pots are installed. Exact jets for the 24 mm venturi 32 PBT's will vary according to locale and preference of the mechanic, but the setting of float level and pump stroke is the same as for the standard Porsche 1500: $0.63 \pm .06$ inch (16 ± 1.5 mm) to the meniscus; and 0.5 cc per stroke in summer and 0.6 cc in winter.

Since the Denzel falls somewhere between the Volks and the Porsche 1500 in most respects, the factory rated 54 hp is somewhat remarkable, as only 55 hp is claimed for the 1500. Power figures, of course, are often misleading, because many different methods are employed in calculation and it is not quite clear how Denzel's figure was determined. No dyno tests have been run here yet, so we'll just string along. Besides, Denzel's data sheets are all in German (and pretty well limited to bare facts). It is fortunate that Hannig and Olbrich and their six mechanics are fluent in the language, since considerable correspondence with Denzel has been involved.

As the re-assembling process went forward, we made a time study and concluded that the VW owner who contemplates such a conversion should allow two days. Much of the first day will be spent dismantling, cleaning and inspecting, particularly if the engine has had much wear and tear. If the original parts are in good shape, they can be sold with a clear conscience. The parts to be retained must be able to withstand substantial increases in engine speed. This applies particularly to the generator, fuel pump, and oil pump. Putting the pieces together moves along smoothly, but some time must be reserved for final tuning and adjustments.

In the case of the engine under scrutiny, it was consigned to a Rometsch convertible and was slipped into place about three in the afternoon. Fred and Ewald spent most of the next two hours playing with combinations, timing, and so on, before they were ready to release it to an anxious customer. The smile which wreathed his face when he returned from a tour around the block was proof that he felt the expenditure was well worth while.

Ah yes, now we get to the vital statistics. Cost of Denzel kit: \$600.00; Installation: \$80.00. Partially offsetting this will be the recovery from sale of the good but unneeded VW parts.

The Denzel conversion appears to be a real deal for two types of Volkswagens: the brand new one with little mileage on the odometer where discarded parts will bring a premium; or the well used model whose engine is shot anyway. Even under other circumstances we feel that the cake is worth the cost because it improves the performance so vividly. Check these figures:

KARMANN-GHIA VW	DENZEL VW
Max. 1st gear 19 mph	28 mph
Max 2nd gear 38 mph	43 mph
Max 3rd gear 57 mph	73 mph
Max top gear 69 mph	93 mph
Standing quarter 53 mph	67 mph

Gasoline mileage doesn't seem to suffer because the improved torque characteristics can mean fewer downshifts in traffic and on hills. A rough estimate on Olbrich's personal car worked out to about 35 mpg. An interesting speculation is how one of these revamped engines in a shortened VW mounting a Devin body would go.

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Tommy Milton (Continued from page 19)

Milton slaved over the car and ran and ran but could not get up to Murphy's time. The gossip grew that Tom didn't have the guts to get his foot into the carburetor as far as Jimmy had. So Milton finally decided that his only hope was to tear the engines down to the last lock-washer, rid them of the sand that they had inhaled, and make a final try. His garage was an open shed on the beach through which sand blew continuously. So he rented enough tarpaulins to erect a tight enclosure around the car and he and Hartz did the job.

The men of Duesenberg never had enough to do things in the big-factory grand manner and the crew at Daytona was very small. The town offered no aid in the policing of the course and the various approaches had to be covered by whatever voluntary manpower they could scrounge. Milton got to the start at the south end and waited until he felt that all hands had ample time to reach their posts at the approach roads to the beach and then he charged off on his first official run. As he headed, full-bore, under a pier that crossed the course, some citizen in a Model T touring car pulled up precisely in the path that Milton was committed to follow. Tom recalls, "The guy was so frightened that he was just jumping up and down in his car, and the small turn I was able to make practically filled his tub with beach sand." Milton had reached this approach road ahead of the guard, but he kept his foot in it until he crossed the finish line.

That was the north run; the south one was more eventful. The car was barreling along wide-open when smoke and flame began to pour from the hood louvers. This was a fairly traumatic moment for a man who had recently been nearly burned to death in a flaming racing car, but Milton kept a cool head. The decision he had to make was whether to slow down and bail out or to take a chance on making it across the finish. He decided upon keeping his throttle foot on the floor. With one eye watching the aluminum firewall for signs of melting and the other watching the course, he edged the car toward the water, prepared to submerge if all hell should let go. He did complete the run with a two-way average of better than 156 mph and the fire finally was put out with sand.

His breach with Murphy was understandably complete while the two men were front-rank contenders, but time has had its inevitable calming effect. Looking back, Milton says, "Those who knew Jimmy will attest to the remarkable personality that was his, and Fred Duesenberg in particular became intensely devoted to him. I know beyond doubt that Fred persuaded Jimmy to run the car all-out. Furthermore it is — or at least it was then — the fervent ambition of any youngster to become the World's Speed King. Undoubtedly the temptation was tremendous to the extent that, momentarily, it over-rode his sense of loyalty. The final word on the matter is that after his untimely death at Syracuse I was privileged to escort his body to Los Angeles."



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In Milton's opinion there were two major faults with the car. One was that the exhaust pipe from the left-hand engine ran through the cockpit. This is indicated in the view of the right-hand side of the car where the pipe can be seen emerging from the cockpit aft of the firewall line. The heat had to be terrific. The other fault is illustrated in the photo of the chassis taken from the rear: the steering column consisted of an open tube. Consequently, when fire broke out in the engine compartment — fed by oil and fuel that had collected in the underpan — oily smoke came pouring up through the tube, covering the windscreen and the driver's face and goggles. Tom finished that final run by using spectators on the beach as a landmark.

There's a lot that is technically interesting in the design of this one-time fastest car in the world. The two engines were mounted side by side and were connected directly, without benefit of transmission, to a common solid rear axle which contained two pinion and ring gears. Cone clutches were used for each engine. This was fortunate because the Contest Board had stated that no reverse gear would be required; however, when the crew arrived at Daytona the decision was reversed, thus creating a major crisis. Milton recalls, "We hurdled this by attaching a flywheel starter gear to the cone of one of the clutches and by making a leather wheel which, with benefit of Rube Goldberg linkage, we were able to press into the crotch of the two flywheels. Since the arrangement was the plan of Fred and Augie Duesenberg, I need feel no embarrassment in stating that it was, by any yardstick, an ingenious solution. The thing actually worked and movies were taken of the car going backwards on the beach.

"The rear tires were 34 x 4½ and the fronts were 32 x 4½ and, by the grace of God and Goodyear, we had no blowouts. The car's acceleration was pretty lousy, not only by reason of the fact that we had but one gear, but because the calculated ratio was unsuitable. The best we could do under the circumstances was to have a couple of bastard pinions made up. They were not hardened and therefore were very inefficient. Because the acceleration was poor — and also the brakes — we probably did not come within several mph of realizing the actual potential of the rig. The steering was not at all bad but the ride was miserable because the suspension was predicated upon the false assumption that the beach would be flat, which it was far from being."

The 156 mph flying mile was a truly heroic accomplishment that brought Milton world fame and a paltry \$2,500 in awards from manufacturers. He went on to win the AAA National Championship that year and '21 he won it again, plus Indianapolis. In '23 he became the first two-time winner of the Indy 500 and today his accumulated 12,367 championship points are surpassed by only one man in the history of American racing: Earl Cooper. At 65, Milton, dapper and energetic, has lost none of the vivid wit, the often courtly manner and the eloquence he was known for in the days when professional championship racing in the U.S. was in its fullest flower.

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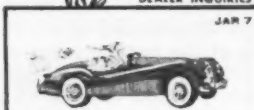
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Maserati Test

(Continued from page 50)

some misgivings. One bystander came right to the point. "Is that the '59 T'bird?" Well, hardly. Undeniably handsome, especially at the front, but it does seem to owe something to the New World.

The dashboard is attractively laid out as the photographs show. To completely eliminate reflections of it in the windshield, it is painted in matt black. This works very well, but near the cigarette lighter and the latch to the glove compartment, fingerprints seemed to mar it slightly. Located at top dead center, the fuse box is nothing if not accessible. Lower down is a nice touch. In the middle of the plate which covers the radio opening is a lapel pin-sized replica of the Maserati trident.

While most details of the six cylinder engine relate strongly to the highly successful 300S (see SCI, July '57) it is not just a stroked version of this power plant. For instance, the two overhead camshafts are driven by a triple chain rather than gears, a spur gear connecting the bottom sprocket to the crankshaft. Other than this the head is very much like the three-liter's, though there are no water inlets between the spark plugs. The two millimeter larger pistons run within wet liners with matching flats on the top flanges, and the aluminum cylinder block seems identical except for the engine mounts. The crankshaft is again a fully machined forging; as well as larger throws, the nose extension is longer to mount the pulley drive for the water pump and generator. A single Marelli ST 111 distributor is mounted on the right where one of the 300S's used to be. Fitted with two rotors stacked one above the other, it uses two coils to fire the twelve spark plugs. The prototype 3.5 engine, first seen in 1956, had two distributors, one on the rear of each camshaft. This was Moss' Mille Miglia car, the one in which he and Jenkinson went tree-climbing. Accessibility would seem much better now, though building two complete distributors into one case must be quite a chore.

Directly aft of the distributor are three giant-size Weber 42 DCOE3 twin-choke, side-draft carbs. For the aesthetically inclined, it is unfortunate that the handsome bell-mouth velocity stacks are shrouded by a huge three-in-one air cleaner. Burnt gasses are swept away in cast iron headers which merge the front three cylinders' exhaust in one pipe and the rear three in another. The rather hot-to-handle dipstick is easily spotted, right between the third and fourth exhaust stacks. Oil replenishment is through a small elbow at the front of the exhaust camshaft cover. The oil pump is mounted externally below the crankshaft, a flexible line transmitting oil under pressure to the filter which lies under the carburetors. Several other external oil lines complete the picture. An oil cooler shares the grille's intake with the water radiator. A small fan is mounted on the shaft of the water pump and the same belt also drives the generator. The system of water hoses would do credit to a fire department; they run all over the place, junctions, clamps and thermostats galore.

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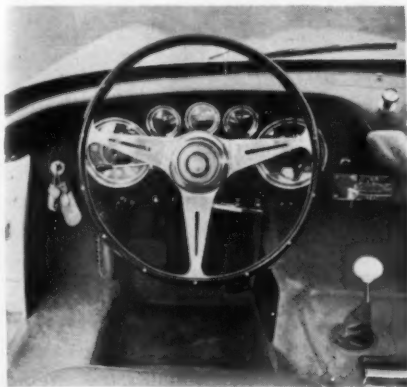
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Racing heritage stands out, the compartment is uncluttered and the correlative goal of easy access is only once not achieved. Though the brake fluid reservoir is mounted high up on the fender panel, the one for the hydraulically operated clutch is tucked way down below, altogether too near the exhaust pipes. Another unworthy choice is the battery location, right behind the engine on the firewall; inaccessible, and another real hot spot.



The all-synchro four speed gearbox is built by ZF in Germany. But like many other components on the car, the Borg and Beck disc clutch is from Great Britain.

This show of internationalism is surprising at first, but there are several advantages that accrue. One, of course, is lower initial cost, an important factor even in cars of this price range. Another is that the Maserati owner in America (for surely this is the market the manufacturers have in mind) may benefit from the tremendous nation-wide availability of service and parts for British cars. The Salisbury rear axle assembly is another example. Since of the seven axle ratios available, all but the highest and lowest are available on one or another of the various Jaguar models, we suspect that they are essentially identical assemblies.

It may well be asked why, with all the firm's racing experience, a de Dion rear axle was not fitted. The main reason is cost, with a reference to noise level within the car being worthwhile. It may be all very well to have a racy sounding exhaust (it does) and even a fair amount of lovely, harsh mechanical noises from under the hood, but bolting the final drive casing to the frame requires lots of rubber bushings and lots of sound absorbing material to keep a closed coupe such as this from sounding like a timpani during Stravinsky's "Rite of Spring".

(Continued on page 60)

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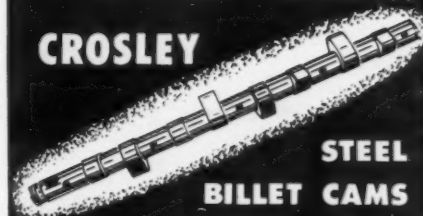
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Maserati Test

(Continued from page 59)

The rigid axle's installation is worth study as a good example of how things should be done. The long, underslung semi-elliptic leaf springs with trailing radius rods overhead ensure reasonable comfort without excessive axle wind-up. Hardly worth a glance are the Girling telescopic shocks, until you realize there are three of them. One on each side as usual, the third one, low, horizontal and about a foot to the right of the driveshaft runs forward from the axle casing to a frame member. Not exactly a lower radius rod, since it can change in length, but it does succeed in damping out any axle movement which might still be allowed by the leaf spring flexibility. Their suppleness also necessitates an anti-roll bar at the rear as well as the more usual one found at the front.

At the front concentric coil spring-shock absorbers are joined to forged wishbones, all of them built by Girling. The brake workings are also Girling, though the drums themselves are not. The latter are the huge, finned aluminum affairs we have come to expect on Italian equipment; despite servo assist with the attendant easy (though not too easy) pedal, fade was never a serious problem even though our brake tests are now done at the end of a standing quarter mile rather than from 60 mph. This change was intended for such cars as this; if they can go fast, they should stop well. In our routine ten stops from 5200 rpm in third (there's our bugaboo again), there eventually were lots of nasty smells and a slight increase in pedal travel and pressure required. There was never any uncertainty that we were going to stop in time, though steering corrections were necessary on the last few stops. Our conclusion is that these are no racing linings, but as we said before this car is not intended for racing. For road use, the brakes are more than ample.

Some may carp at the presence of disc wheels on a car such as this. It should be noted first of all that they are made by none other than Carlo Borroni and secondly that they are thoroughly slotted; the slots are radial and the flanging is outboard which gives them a very business-like appearance. Besides, they're easy to clean! Oddly enough, only four husky nuts are used to attach them to the hubs. For those who insist, wire wheels should certainly be available, though if racing leads the way, then disc wheels must be coming back.

We've saved the best for the last . . . driving the car. In three words, what a ball! You slip into the handsome, contoured, leather-covered seat, adjust it till the pedal distance suits you, then put the key in the switch. Here's a nice touch, it's symmetrically cut so either edge may be "up". Switch on, and the electric pump starts to fill those three big float chambers. Tick-a-tick-a-tick. If the 3.5's been sitting long, this seems interminable. And if it's dead cold, a depression or maybe two of the accelerator to wet things down. If not, it'll start right up on the idle setting. Twist the key again and the engine jumps

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into life, humming away at 1000 revs like a dozen distant typewriters.

While the engine's warming up you might start winding the window down for its only 10½ full turns! Touring's first-off 3.5 had electric operation here; hang the expense, they should go back to it. Stalling too at this time is the arms forward position required to grip the handsome wood-rimmed steering wheel.

After the engine's warmed a bit, depress the clutch — there's a surprise too, it is stiff — and snick it into gear. It's belaboring an old cliché but the gear lever does fall readily to hand. Not only that, its movements are short, light and definite. In fact, it's the very model of a proper sort of gearbox. Though the clutch is strong, it takes hold smoothly with nary a trace of chatter nor slip. We've mentioned the possibility of leaving double rubber marks when desired, so altogether the drive line rates 100%.

When opening the throttle suddenly, there is the typical Weber flat spot and then a delightful surge of power as the car reaches forward, hungry for the miles ahead. And it wasn't long before we were equally hungry for them. The first few corners were treated with all the respect the car itself deserves. Then we remembered that this straight arm technique is the same used by Stirling Moss. If it's good enough for him, it's good enough for us, we said to ourselves (some logic!) and we started laying into each turn a little harder. Well, we got a real surprise. This is a great big, three and a half liter bomb, but its steering is so light, so responsive and the car as a whole is so nimble, we could hardly believe ourselves.

Though the arms-out steering position is really great for dicing through twisty countryside, on straight runs an adjustable steering column that would let us pull the wheel closer would have been most welcome.

While it is delightful to have genuine back seats in a car of this type, they are strictly of the occasional type. Even our shortest friends found the roof line all too close on the first good sized bump. But access to them is very good indeed, as the front seats slide forward as the folding backs are tilted.

When we got to Lime Rock we really let ourselves go. And right up to the so-called ragged edge. When we tried to take it round a given radius at too high a speed—by George, I thought I was Stirling Moss for a moment — that extra cocking of the wheel into the turn would pull the nose in a bit as the tail moved out about the same, the tires protesting more and more all the while. And all of this so smoothly, so lightly. Truly a superb handling automobile.

But it does have drawbacks, one of them serious. The ride is a bit choppy but our biggest complaint is the cockpit heat. We opened every scoop, pulled every knob and still just about got cooked inside. Admittedly, we did find later that one fresh-air butterfly was stuck closed — it would be the one right in front of the driver — but with the engine heat building up as it did in hot summer traffic, this would only have helped measurably out on the open road.

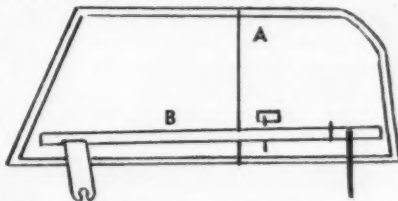
—Stephen Wilder

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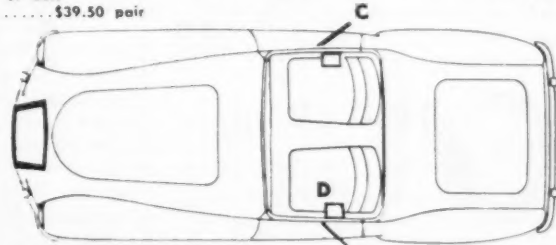


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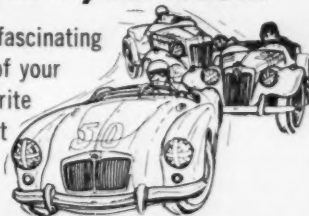
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Ferrari 250 TR

(Continued from page 36)

The 250 TR very willingly hangs its tail out in the turns in sensitive and immediate response to degree of throttle opening. It is easy to position the car just at the apex of the curve with a quick slide so that it is pointed perfectly down the straight and increased power can be applied at the earliest possible instant.

The 250 TR's engine is notable for its better-than 100 bhp per liter output and for its exceptional reliability. In spite of their red-line of 7200 rpm these cars have been known to come in to the pits with their tell-tale needles showing 8500 or so. But this has not been known to produce bent valves or rods or bearing metal in the oil. After all its flogging, Ginther's engine doesn't seem at all tired. Its compression is down a bit, but uniformly; its valves aren't leaking and its rings are undergoing normal wear. Its single-plate clutch — another innovation for Ferrari — seems like new. It just runs and runs awfully well; the strong power supply is notoriously immune to fatigue or failure.

Long years of development contribute greatly to this reliability. This is the basic engine that Giacomo Colombo designed for the first Ferrari V12 back in 1947. It has been refined for more than 11 years. Of special interest is its near identity with the power plant of the 250 GT which differs from the 250 TR only in its cylinder heads, valve timing and carburetion. The GT employs 9 to one compression, the TR 9.8. The GT has three double-throat Weber carbs feeding six intake ports; the TR has six such carbs feeding 12 ports. The GT's torque comes in at around 4000 and hotter cams bring in the TR's at 6000. The GT develops a claimed 240 bhp and the TR 320 in its latest form. Both use wet sump lubrication. The GT engine is simply a detuned version of the engine of one of the best race cars in the world.

Why has Ferrari chosen the more complex V12 in place of its greatly successful four-cylinder Testa Rossa? The answer evidently is standardization. Clearly, it would be a great money-saving move if a firm's competition machines and volume-produced road vehicles could be built from all, or nearly all, the same components. The four, with its inherent roughness and with the noise of its gear-driven d.o. valve train, was poorly suited to powering a luxury touring car. Furthermore, piston speeds and mechanical stresses are far lower for the V12 configuration than for the four of equal capacity. Also, big displacement changes may be made in a 12 by means of very small changes in bore and stroke. So, literally out of the same mold, Ferrari has cast both a racing car and a touring car, a relationship from which both models benefit enormously.

The interchangeability of their parts applies throughout their chassis. Gearbox internals are identical although the TR's box is more heavily reinforced. The ZF single-plate clutches — in place of traditional Ferrari multiple-disc assemblies —

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Ferrari 250 TR

are the same and, incidentally, are very durable. Brake and clutch pedal assemblies are the same. So are all the suspension components although the rear axle that both models share is suspended from coil springs in the case of the TR and from semi-elliptics in the GT.

Because it was desirable to equip the production models with left-hand steering, the TR uses it too . . . for the first time in a Ferrari competition car. The super-potent drum brakes are the same on both models with one exception: the fins on the GT's light alloy drums run around the periphery while they are machined diagonally on the TR. The reason for the difference seems to lie in Ferrari's policy of never ending experimentation.

The firm has now adopted the two leading-shoe principle at the front, in combination with its fine "symmetric expansion" type at the rear. In these the shoe has a deep web which is slotted in the center. This slot rides on a pin which guides the shoe in an in-and-out direction. Hydraulic cylinders with two pistons each separate the free ends of the two shoes and exert the symmetric expansion. While the rear shoes are guided at the centers of their webs, each front shoe is located conventionally at one end only to give the two leading-shoe effect.

It has been stated elsewhere that a de Dion rear axle is optionally available in place of the ZF live axle. This is untrue. It is a fact that several factory team TR's have been fitted with de Dions. They have run in the same events with the team live-axle cars without showing any pronounced advantage even on rough and very fast courses. The de Dion TR's that are finding their way into private ownership are team cars that the factory has chosen to sell.

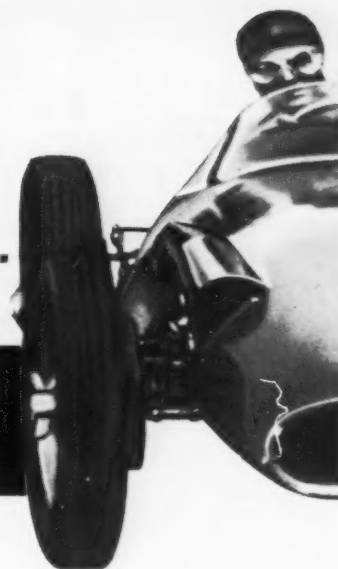
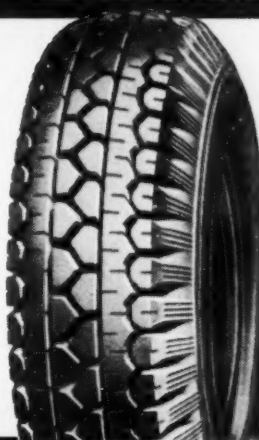
This is just another example of Ferrari's dynamic development program, a major feature of which is testing in the crucible of competition. Still another example lies in the 250 TR's distinctive Scaglietti body. In it, some aerodynamic sacrifice was made in order to get better brake cooling. But in some of the latest specimens — the Le Mans cars for example — the full envelope body has been used again. The whole history of Ferrari cars is marked by this restless refusal to let well enough alone and, within reason, to tailor the car to the specific job to be done.

For all its fierce performance the 250 TR is a car that any driver of reasonably sound ability and judgement could drive, enjoy and stay entirely out of trouble. The engine, with its chain-driven cams, is not notably noisy. The quiet, full-synchro transmission calls for no skill in shifting and the clutch, brake and steering pressures are modest. With mufflers installed this car would be sheer joy to drive on the open road. On a race course, which is what it was designed for, it is the sports-car formula car to try to beat. It is the sort of ultimately obedient, ultimately responsive machine that most of us would give a great deal to stay strapped in for a very long time.

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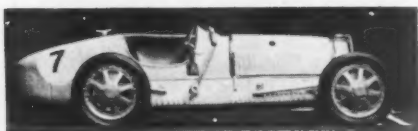
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Monza

(Continued from page 31)

was a tremendous handful at speeds over 165 mph. Musso worked very hard to hold the car on his chosen line, and put it into full lock slides all the way 'round.

Ferrari had prepared two cars for the Monza 500. The first was the aforementioned 4 liter machine, designated the Tipo 412 M/I, which had a 4 liter V-12 twin-cam sports car engine set into an extremely solid and robust tubular chassis. Rear suspension was even more rugged, with 2 Houdaille shocks mounted on either side. Front suspension was via wishbones and coil springs, with husky rubber stops fitted inside the springs. Radially finned brake drums were of a new Ferrari type, and only three speeds out of the five-speed gear box were retained.

The second Ferrari utilized a 3 liter V-6 set in at a slight angle to the center line of the chassis, similar to the current Ferrari Formula I car. Ferrari chose this machine as experimental for a new type of cast rubber coil spring, the rubber acting as a sort of boot around the metal coils. But tests during practice showed the car to be completely unmanageable. It was too soft and mushy for proper control, and the experimental springs were replaced.

It was felt that had Ferrari really given the project extensive time and thought, he could have come up with a chassis that would have been sensational for the Monza bankings. As it was, there was considerable unwanted sideways thrust, and the resultant tire scrub was the main reason why the car finished third and not second. In addition, several spokes on the wire wheels could not take the strain and broke in the first heat. But as far as drivers were concerned Ferrari was in good shape with Musso, Hawthorn and Hill, all on tap to drive the two cars. Musso, however, was not up to par physically and after only a few laps in the first heat he climbed out of the car and slumped down on the pit counter, affected by fatigue, pain from his back, and fumes. Hawthorn then took over, Phil Hill having started in the 6 cylinder car. It, however, retired with magneto failure on the 19th lap of the first heat. Phil drove the 4 liter car for part of the second heat and for a good part of the third, gradually getting used to the bankings if not necessarily liking it.

Fangio's expected participation at Monza gave plenty of copy to the wire services and daily paper boys. But quite frankly, no one ever really expected him to drive on Sunday. The apparent contract difficulties were eventually sorted out, and Fangio qualified the Dean Van Lines car at 171.2 mph on Friday. Then the car didn't appear again until the third heat on Sunday, for a piston had to be replaced at the last minute and the engine hastily rebuilt. As a result the car did not last for more than one lap when the fuel pump ceased to function.

Maurice Trintignant gamely had a go at the wheel of the Slavi and Amos Special, qualifying at the modest speed of 160.326 mph. He drove the first heat but was replaced in the second and third.

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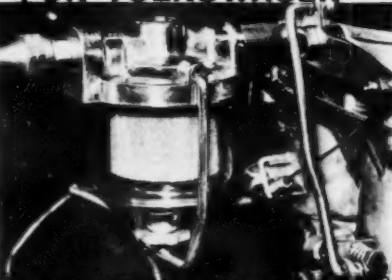
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somewhat overshadowed this year by the presence of both Ferrari and Maserati. The Jaguar single-seater was fitted with a Lister chassis, but unfortunately its wide frontal area plus the fact that the 3.8 Jaguar engine was not putting out more than 305 horsepower did not give the car sufficient steam to send it down the straightaway at competitive speeds, despite the fact that it was considerably lighter than the normal D type. In an effort to overcome the tire difficulties they experienced last year, the two D-types had huge air scoops over the right rear tire with an air exit down low out behind, in an effort to keep this one critical tire at a safe temperature. Dunlop 650 x 17's were run on the D's, while the single-seater was fitted with 700 x 17's on the front and 700 x 18's at the rear. The Ferrari, as well as the American cars, were all running on the Firestone Monza tire.

Harry Schell drove Luigi Chinetti's 4.5 liter single-seater Ferrari, the same car that Farina had used at Indy in 1954. But to all intents and purposes it was hopelessly outclassed by the newer machinery. Schell qualified at 152.263 mph.

All of the American cars came to Monza this year well prepared for the brutal poundings they knew the cars would be subjected to. Heavier torsion bars and dual Monroe telescopic shock absorbers were the order of the day, and as a result, there was much less chassis and suspension breakage than in 1957.

The European "aficionados" were tremendously impressed with the Belond A.P. driven by Jim Bryan. Bryan just didn't go fast enough however, to stay with Rathmann. The Belond itself is a stunning piece of machinery, and the Italians had never seen anything like it before.

How did the European drivers like the Monza bankings? "Not too well," would be the honest reply. Monza was just as rough this year as it was last, despite any word to the contrary. Moss, as well as the Ferrari drivers, finally fitted shoulder and lap harnesses to hold them in the car and to keep their motion phased with that of the machine. Luigi Musso's first heat effort will go down in the history books. It took Stirling Moss a bit longer to feel reasonably confident, but by Heat 2 he began to really stand on the Eldorado, dicing terrifically with Veith and Bryan. Credit as well to Phil Hill and Mike Hawthorn, for making the most out of an unpleasant job. Phil, again as in sports car racing, was aware of just the right race tempo needed to allow the car to finish in the money.

Up to the 1958 Monza, these bankings were an unknown quantity to most European drivers, despite earlier runs in sports cars at much lower speeds. As soon as the initial uncertainties were overcome they went just as well as the Indy boys.

We want to see the Monza 500 again in 1959. The '58 race was a terrific success, from the standpoint of spectacular motor racing. If Ferrari comes back next year we hope he'll make a real effort at constructing an Indy-type machine with offset engine. We'd also like to see Moss and Hawthorn have a go in a top flight American car, such as the Belond or the Zink machine. There is absolutely no reason why they should not do extremely well.

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